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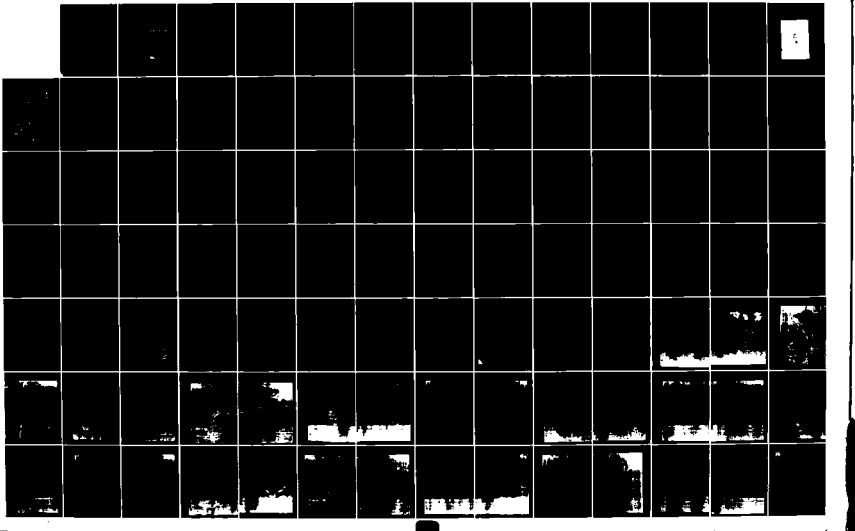

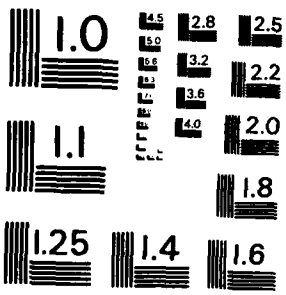

CONNECTICUT RIVER BASIN
WEST HARTFORD, CONNECTICUT

TALCOTT RESERVOIR DAM

MAIN DAM CT 00490

DIVERSION DIKE CT 00489

DIKE NO. 2 CT 01710

PHASE 1 INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

MAY, 1981

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,
Connecticut River Basin
West Hartford, Connecticut

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Thsi flood control project consists of three structures: the Main Dam, the Diversion Dike and Dike No. 2. Each structure is an earth embankment at 3H:1V with a good grass cover and a top width of 12 feet. Based on the visual inspection, review of design information and past operational performance, these structures are judged to be in GOOD condition. These structures are classified as INTERMEDIATE in size and HIGH hazard potential structures. The test flood is the PMF.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO ATTENTION OF

JUL 09 1981

NEDED

Honorable William A. O'Neill
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Talcott Reservoir Dam, Main Dam (CT-00490), Diversion Dike (CT-00489) and Dike No. 2 (CT-01710) Phase I Inspection Report, prepared under the National Program for Inspection of Non-Federal Dams. This report is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. I approve the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is vitally important.

Copies of this report have been forwarded to the Department of Environmental Protection. Copies will be available to the public in thirty days.

I wish to thank you and the Department of Environmental Protection for your cooperation in this program.

Sincerely,

C. E. EDGAR, III
Colonel, Corps of Engineers
Commander and Division Engineer

Incl
As stated

CONNECTICUT RIVER BASIN

WEST HARTFORD, CONNECTICUT

TALCOTT RESERVOIR DAM

MAIN DAM CT 00490

DIVERSION DIKE CT 00489

DIKE NO. 2 CT 01710

PHASE 1 INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM

PHASE I - INSPECTION REPORT

Identification No.:	CT 00489 (Diversion Dike) CT 00490 (Main Dam) CT 01710 (Dike No. 2)
Name of Dam:	Talcott Reservoir Dam
Town:	West Hartford
County and State:	Hartford County, Connecticut
Stream:	Tributary to Trout Brook
Date of Inspection:	November 17, 1980

BRIEF ASSESSMENT

This flood control project consists of three (3) structures: the Main Dam, the Diversion Dike and Dike No. 2. Each structure is an earth embankment at 3H:1V with a good grass cover and a top width of 12 feet.

Principal dimensions of these three structures are as follows:

Structure	**Length (ft.)**	**Height(ft.)**
Main Dam	1300	30
Diversion Dike	3125	30
Dike No. 2	210	18.5

The Diversion Dike is located 3000 feet north of the Main Dam; while Dike No. 2 lies 600 feet east of the Diversion Dike.

The principal spillways consist of a reinforced concrete riser and 30 inch RCP through the Main Dam and Diversion Dike. The emergency spillways are grassed channels, 40 feet wide in the eastern 1/3 of the Main Dam and 90 feet wide at the eastern end of the Diversion Dike. The reservoir is normally empty except for small sediment pools at the principal spillway inlets. These structures are owned by the State of Connecticut, Department of Environmental Protection.

Based on the visual inspection, review of design information and past operational performance, these structures are judged to be in GOOD condition. There is some erosion due to vehicle trespass, some sloughing of the embankments, and animal burrows.

These structures are classified as INTERMEDIATE in size and HIGH hazard potential structures in accordance with the Recommended Guidelines for Safety Inspection of Dams, by the Corps of Engineers. The impoundment storage at the top of the structures is 1205 ac.-ft.

Failure of any of the embankments could result in the possible loss of more than a few lives and extensive economic damage to numerous homes and buildings along the downstream channel in West Hartford. Depths of inundation at these homes and buildings may range from 2 to 10 feet in the event of failure of the Main Dam, from 4 to 12 feet in the event of failure of the Diversion Dike, and from 1 to 3 feet in the failure of the Dike No. 2.

The test flood is the Probable Maximum Flood (PMF). The test flood has an inflow equal to 4050 cfs and an outflow discharge equal to 2670 cfs at a stillwater elevation of 456.2 which will not overtop the dam (1.8 feet freeboard). -The maximum outflow capacity of the spillways with the water level at the top of the dam is 5400 cfs, which is 203 percent of the test flood outflow.

It is recommended that the following items be studied further by a qualified registered engineer: Investigate the cause of the holes at the outlet end of the emergency spillway and design repairs as necessary (Main Dam). Investigate the low spot in the top of the embankment in the vicinity of the bend between Stations 22 and 23 and design repairs as necessary (Diversion Dike). Investigate the discharge adequacy of the drainage channel which runs along the upstream side of the embankment along that portion adjacent to Route 44 (Diversion Dike). Investigate the erosion and sloughing around the outlet pipe and design repairs as necessary (Diversion Dike). Investigate the minor sloughing in the wet area at the downstream toe of the embankment in the vicinity of Station 8 and design repairs as necessary (Diversion Dike). The reservoir should be visited when flood waters are being impounded to check for problem areas (general).

The following remedial measures should be taken by the owner: Repair of minor sloughing at the outlet and monitoring of seepage throdugh the riprap at the outlet of the Main Dam. Repair of the erosion at the vent, removal of the brush from the riprap at the outlet and clear brush from the drainage channel along the upstream face adjacent to Route 44, at the Diversion Dike. Recreational vehicle access should be eliminated, vehicle ruts should be repaired, animal burrows should be filled, the semi-annual inspections continued, and the existing flood emergency plan amended to provide downstream warning procedures.

Recommendations and remedial measures that should be implemented within one year or two years, as noted, of receipt of this Phase I Inspection Report are further described in Section 7.

JAMES P. PURCELL ASSOCIATES, INC.

Sudhir A. Shah

Sudhir A. Shah, P.E.
Director of Engineering
Connecticut P.E. No. 8012

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation. However, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there by any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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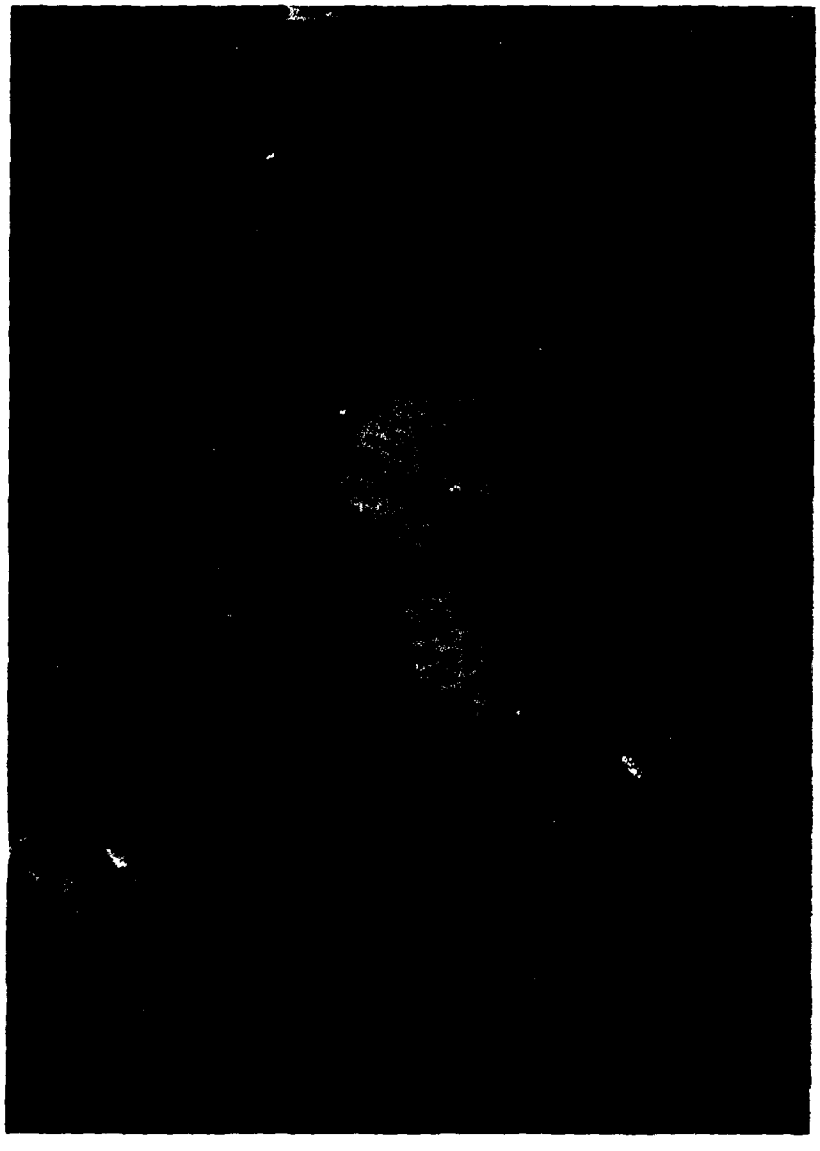
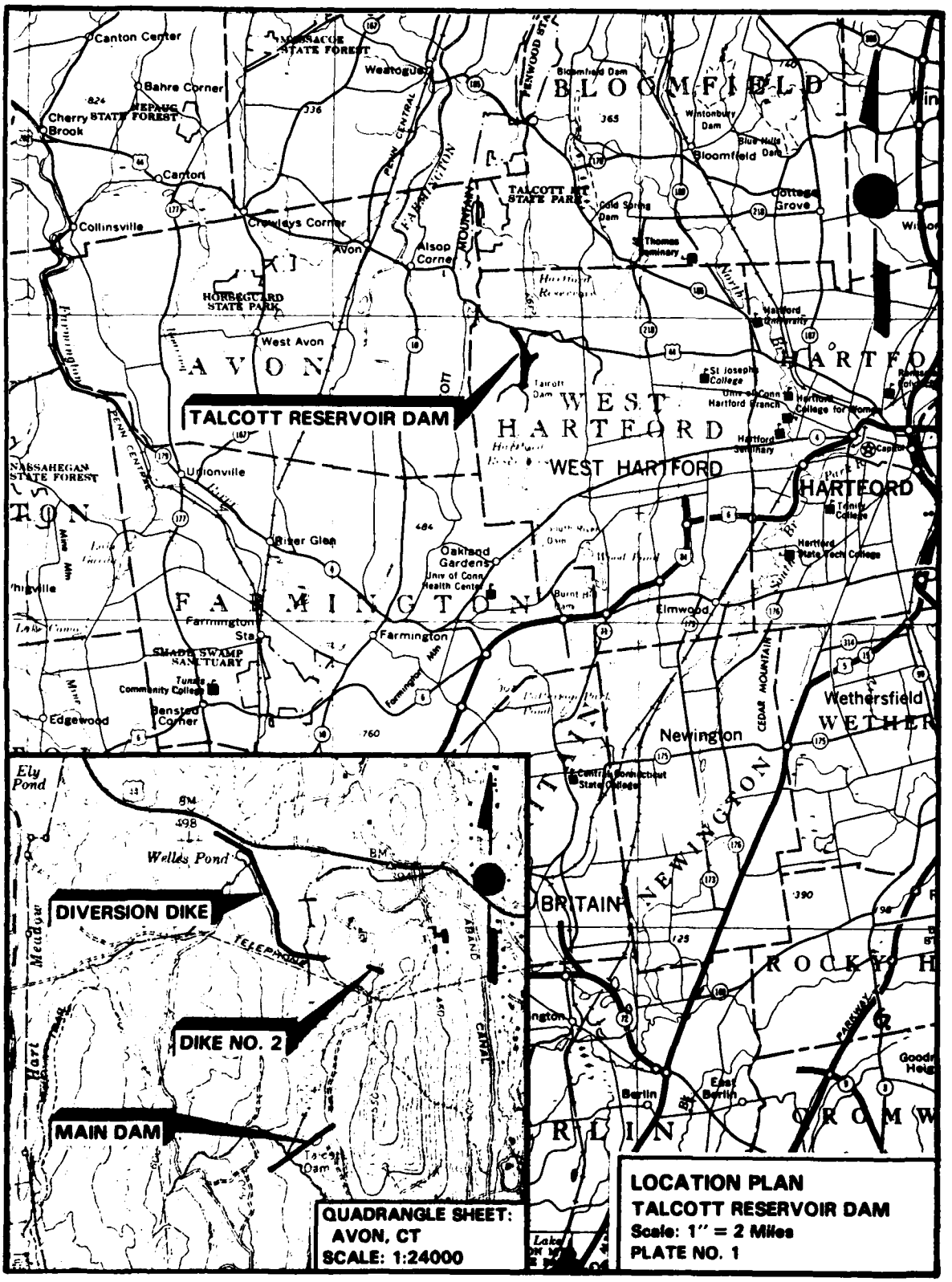
APPENDICES



OVERVIEW PHOTO - TALCOTT RESERVOIR DAM

PHOTO TAKEN DECEMBER 15, 1980


TALCOTT RESERVOIR DAM
DIVERSION DIKE
DIKE NO. 2
MAIN DAM
QUADRANGLE SHEET:
AVON, CT
SCALE: 1:24000
LOCATION PLAN
TALCOTT RESERVOIR DAM
Scale: 1" = 2 Miles
PLATE NO. 1

NATIONAL DAM INSPECTION PROGRAM

PHASE I - INSPECTION REPORT

NAME OF DAM: TALCOTT RESERVOIR DAM
(Main Dam, Diversion Dike, Dike No. 2)

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority:

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army through the Corps of Engineers to initiate a national program of dam inspections throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. James P. Purcell Associates, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed was issued to James P. Purcell Associates, Inc., under a letter from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-81-C-0009 has been assigned by the Corps of Engineers for this work.

b. Purpose:

1. Perform technical inspection and evaluation of non-federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-federal interests.

2. Encourage and prepare the States to initiate quickly, effective dam safety programs for non-federal dams.

3. To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location:

The Talcott Reservoir structures are located in the Town of West Hartford, Hartford County, Connecticut (See Plate No. 1).

The Diversion Dike is located on the south side of U.S. Route 44, approximately 2.8 miles east of the village of Avon. The dike is built across a tributary to Trout Brook and is located 4.4 miles upstream of the confluence with Trout Brook. The dike is at latitude 41°-47'-14" and longitude 72°-47'-06".

The Main Dam is located approximately 3000 feet due south of the Diversion Dike. The dam is built across a tributary to Trout Brook and is located 1700 feet upstream of Hartford Reservoir No. 2. The dam is at latitude 41°-46'-42" and longitude 72°-47'-10".

The Dike No. 2 is located across a small valley approximately 600 feet east of the east end of the Diversion Dike. The dike does not cross a water course but is used to contain flood waters within the reservoir. It is located at latitude 41°-47'-10" and latitude 72°-47'-10".

Trout Brook is a tributary to the south branch of the Park River which flows through Hartford, Connecticut to the Connecticut River.

All elevations used in this report are based on the Metropolitan District Commission (MDC) Datum, except as noted. The MDC Datum minus 2.08 feet equals the National Geodetic Vertical Datum (NVGD).

b. Description of Dam and Appurtenances:

The Talcott Reservoir Project consists of a Main Dam, a Diversion Dike and the Dike No. 2. They are all earth embankments with good grass covers, a top width of 12 feet at elevation 458.0 and side slopes of 3H:1V.

The Main Dam is 1300 feet long and 30.0 feet high. It has an embankment and foundation drain along the downstream toe in the vicinity of the outlet. The Main Dam is unzoned compacted earth fill with a 12 foot wide cutoff trench.

The Diversion Dike is 3125 feet long and 30.0 feet high. It has an embankment and foundation drain along the downstream toe in the vicinity of the outlet and at the northern end of the dike. Approximately 1200 feet of the dike was constructed partially of rockfill with an impervious upstream face and top. There is a two layer granular filter on the upstream face of the rockfill. The remainder of the dike is unzoned compacted earth fill. There is a 12 foot wide cutoff trench.

The Dike No. 2 is 210 feet long and 18.5 feet high. It has a filter blanket seepage drain along the downstream toe. There is a 12 foot wide cutoff trench.

The outlet works consist of a principal spillway and an emergency spillway at the Main Dam and the Diversion Dike. There are no outlet works at the Dike No. 2. Both principal spillways consist of reinforced concrete risers and a 30 inch reinforced concrete pipe extending from the riser, through the embankments, to a free outlet at the downstream face. Flow into these 30 inch pipes is restricted by steel oriface plates attached to the upstream end of the pipes. This was done in order to achieve the desired outflow rates with use of the 30 inch pipes required for internal inspection. The crest of the risers are at elevation 435.0 and are protected by angle iron trash racks. The pipes are vented by a 4 inch diameter steel pipe extending to elevation 452.5. There are no drains into the risers and the small sediment pools cannot be emptied.

The emergency spillways are grassed earth channels at the eastern end of the Diversion Dike and the eastern third of the Main Dam. The crests of the spillways are 30 foot long level sections at elevation 452.5. The bottom widths are 40 feet at the Main Dam and 90 feet at the Diversion Dike, and the side slopes are 3H:1V. The lengths of the spillways are 300 feet at the Main Dam and 500 feet at the Diversion Dike.

c. Size Classification:

The size classifications of all three structures are INTERMEDIATE as per criteria set forth in the Recommended Guidelines for Safety Inspection of Dams by the Corps of Engineers. The impoundment storage at the top of all three structures is 1205 acre-feet (within the range of 1000 to 50,000 ac.-ft.). The maximum height of the Main Dam is 30.0 feet (within the range of 25 to 40 feet-small classification), of the Diversion Dike is 30.0 feet (within the range of 25 to 40 feet-small classification) and of the Dike No. 2 is 18.5 feet (range 25 to 40 feet-small classification). The size classifications of these structures is based on the impoundment storage criteria.

d. Hazard Classification:

The hazard classifications for all three structures are HIGH as per the criteria set forth in the Recommended Guidelines for Safety Inspection of Dams, by the Corps of Engineers.

In the event of failure of any of the structures, numerous homes and buildings in an urbanized area of West Hartford could suffer excessive damage. The potential exists for the loss of more than a few lives at numerous downstream homes.

Depths of inundation at these homes and buildings may range from 2 to 10 feet in the event of failure of the Main Dam, from 4 to 12 feet in the event of failure of the Diversion Dike, and from 1 to 3 feet in the failure of the Dike No. 2. No homes would be inundated by pre-failure flows. These homes and buildings range from approximately 0 to 10 feet above normal brook levels.

e. Ownership:

The Talcott Reservoir structures are presently owned and maintained by: The State of Connecticut, Department of Environmental Protection.

f. Operator:

The person in charge of maintenance of the structures is:

Mr. Anthony Cantele
Regional Director, Region I
Conservation and Preservation Division
Department of Environmental Protection
P.O. Box 161
Pleasant Valley, Connecticut 06063
Telephone: (203) 379-0771

g. Purpose:

These floodwater retarding structures provide flood protection to the flood plain on the South Branch of the Park River.

h. Design and Construction History:

The design of the project was completed by the Soil Conservation Service in 1963 and construction was completed in 1964.

i. Normal Operating Procedures:

There are no day-to-day operational procedures for these structures. The reservoir is normally empty except for small sediment pools around the principal spillway risers and all flow is discharged through the two principal spillways.

1.3 Pertinent Data

a. Drainage Area:

The Talcott Reservoir drainage basin is irregular in shape with a total drainage area of 1.6 square miles (see drainage area map in Appendix D). The topography is generally rolling terrain with elevations ranging from a high of 820 feet to a low of 435.0 feet at the principal spillway crests. Stream and basin slopes are moderate, 5 percent and 10 percent, respectively. The sediment pools occupy a negligible portion of the watershed, however, approximately 25 acres between the Main Dam and Diversion Dike consist of a shallow swamp at elevation 435.0.

b. Discharge at Dam Site:

There are no specific discharge records available. Listed below are calculated discharge values of the emergency spillways and outlet works (30 inch principal spillways).

1. Outlet Works: Two 30 inch pipes with inverts at elevation 431.0 and a total discharge capacity of 120 cfs at elevation 452.5.

2. Maximum known discharge at dam site: Unknown.

3. Ungated spillway capacity at top of dam: 1760 cfs (Main Dam) and 3500 cfs (Diversion Dike) at elevation 458.0.

4. Ungated spillway capacity at test flood elevation: 860 cfs (Main Dam) and 1680 cfs (Diversion Dike) at elevation 456.2.

5. Gated spillway capacity at normal pool elevation: N/A

6. Gated spillway capacity at test flood elevation: N/A

7. Total spillway capacity at test flood elevation: 860 cfs (Main Dam) and 1680 cfs (Diversion Dike) at elevation 456.2.

8. Total project discharge at top of dam: 5400 cfs at elevation 458.0.

9. Total project discharge at test flood level: 2670 cfs at elevation 456.2.

c.	**Elevation (Feet Above MDC Datum):**	
	1. Stream bed at toe	428.0 (Main Dam) 428.0 (Diversion Dike) 439.5 (Dike No. 2)
	2. Bottom of cutoff	428.0 (Main Dam) 425.5 (Diversion Dike) 439.5 (Dike No. 2
	3. Maximum tailwater	Unknown
	4. Normal pool	435.0
	5. Full flood control pool	452.5
	6. Spillway crest	452.5 (emergency spillway)
	7. Design surcharge	455.4
	8. Top of dam and dikes	458.0
	9. Test flood level	456.2
d.	**Reservoir (Length in Feet):**	
	1. Normal pool	3000
	2. Flood control pool	3000
	3. Spillway crest pool	3000 (emergency spillway)
	4. Top of dam and dikes	3000
	5. Test flood pool	3000
e.	**Storage (acre-feet):**	
	1. Normal pool	25±
	2. Flood control pool	826
	3. Spillway crest pool	826 (emergency spillway)
	4. Top of dam and dikes	1205
	5. Test flood pool	1086

f.	**Reservoir Surface (acres):**	
	1. Normal pool	24.2
	2. Flood control pool	65.7
	3. Spillway crest	65.7 (emergency spillway)
	4. Test flood pool	73
	5. Top of dam and dikes	80.5
g.	**Dam and Dikes:**	
	1. Type	Earth embankments
	2. Length	1185 (Main Dam) 2860 (Diversion Dike) 210 (Dike No. 2)
	3. Height	30 feet (Main Dam) 30 feet (Diversion Dike) 18.5 feet (Dike No. 2)
	4. Top width	12 feet
	5. Side slopes	3H:1V
	6. Zoning	Unzoned compacted earth fill. Also rockfill on portions of Diversion Dike.
	7. Impervious Core	None
	8. Cutoff	12 foot wide cutoff trenches
	9. Grout curtain	None
	10. Other	- -
h.	**Diversion and Regulating Tunnel:**	**N/A**
i.	**Spillway**	**(emergency spillway)**
	1. Type	Grassed channel
	2. Width of channel	40 feet (Main Dam) 90 feet (Diversion Dike)
	3. Crest elevation	452.5

4.	Gates	None
5.	U/S Channel	Grassed channel
6.	D/S Channel	Grassed channel
7.	General	Good condition

j. Regulating Outlets: (principal spillways)

Refer to Paragraph 1.2b - "Description of Dam and Appurtenances" for description of Outlet Works.

		Main Dam	**Diversion Dike**
1.	Invert	431.0	431.0
2.	Size	30 inch	30 inch
3.	Description	Reinforced concrete pipe	Reinforced concrete pipe
4.	Control mechanism	None	None
5.	Other	Steel oriface plate Riser Crest: Elevation: 435.0	Steel oriface plate Riser Crest: Elevation: 435.0

SECTION 2

ENGINEERING DATA

2.1 Design

The available design data consists of the following documents and plans prepared by the Soil Conservation Service.

a. "As-built" drawings of the construction plans, Talcott Reservoir Dam, 1963. Copies of these plans are included in Appendix B-3.

b. Original design calculations and report.

c. Stage-storage, stage-reservoir area, and stage-discharge curves.

d. Information storage and retrieval form.

Refer to Appendix B-1 for location of this material.

2.2 Construction

The SCS provided inspection during construction of the structures, which was completed in 1964. The SCS has construction inspection reports in storage. These reports were not reviewed in the preparation of this Phase I Inspection Report.

2.3 Operation

There is no day-to-day operational procedures. The site is visually inspected semi-annually by the State of Connecticut. Inspection records are available from the owners.

2.4 Evaluation

a. Availability:

All information concerning these structures was gathered by field investigation and meetings with the Soil Conservation Service and from the files of the Department of Environmental Protection, Water Resources Unit, Dam Safety Engineers, State Office Building, Hartford, Connecticut.

b. Adequacy:

The information that was available complimented a complete visual inspection of this facility and is adequate at this time.

c. Validity:

The engineering design data provided by the SCS has been deemed adequate for the purpose of this Phase I Inspection Report. The as-built plans appear to adequately represent the present configuration of the structures based upon the visual inspection. This investigation did not include a detailed engineering check of the SCS design file.

SECTION 3

VISUAL INSPECTION

3.1 Findings

a. General:

The visual inspection of the Talcott Reservoir Structures was conducted on November 17, 1980 and a copy of the visual inspection check list is contained in Appendix A of this report.

The following procedure was used:

1. Inspection of the upstream reservoir area which would be impounded by the dam and dikes.

2. Visual inspection of the face and top of the dam, dikes and spillways for cracks, settlement, seepage, etc.

3. Inspection of the outlet works and other appurtenances as to their existence, location and operability.

4. Review of procedures that could be utilized in the event of an emergency situation.

5. A check of the downstream area for seepage, piping, boils or other indications of abnormal conditions. The downstream hazard potential in the event of dam or dike failure was investigated.

6. Photographs of the general area of the dam and of specific items of note were taken and are included in Appendix C of this report.

   Before the inspection, the available existing data was studied and reviewed.

b. Main Dam and Appurtenant Structures:

1. Crest: The dam consists of an earth embankment with no evidence of misalignment or settlement. The top of the dam is 12 feet wide and contains a grassed service road. There are wheel ruts and foot paths along the top of the dam, but no bare earth is exposed (Photo C-1).

2. Upstream Face: The upstream face consists of a grassed earth slope (Photos C-2, C-4). Only a few

small animal burrows, approximately 1 inch in diameter, were noted. Some slightly larger animal burrows were noted in the upstream toe approximately 100-150 feet west of the emergency spillway.

3. Downstream Face: The downstream face is an earth slope with a good grass cover (Photo C-3). Numerous large animal burrows were noted all along the toe of the embankment. These burrows were up to 6 inches in diameter. There are several large holes associated with animal burrows at the joint between the embankment and west emergency spillway embankment. The largest of these is shown in Photo C-7 and is approximately 2 feet in diameter. Minor sloughing is occurring around the outlet pipe.

4. Principal Spillway: The principal spillway consists of reinforced concrete riser and uncontrolled 30 inch reinforced concrete pipe extending through the dam. These concrete structures are in good condition. The inside dimensions of the riser are 3.5 feet by 4 feet. The riser is protected by an angle iron trash rack (Photo C-8). The pipe outlets to a riprap stilling pool (Photo C-10). There is standing water in the riprap at the outlet (Photo C-9) which is approximately 1 foot higher than the stilling pool.

5. Emergency Spillway: The emergency spillway is a 40 foot wide grassed channel with side slopes of 3H:IV and is approximately 300 feet long (Photo C-5). There are vehicle ruts with some bare earth in places on the floor and sides of the channel.

   Several large holes were noted in the floor of the channel at the downstream end (Photo C-6). These appear to contain animal burrows at the bottom. The largest hole is 3 feet deep and approximately 7 feet by 10 feet wide. The downstream floor of the spillway ends at a 2H:1V slope down to existing woodland. This slope is vegetated with brush and small trees. The spillway floor appears to have been extended downstream in this area (Overview Photo).

c. Diversion Dike and Appurtenant Structures:

1. Crest: The dike consists of an earth embankment with no evidence of misalignment (Photos C-11, C-16, C-17). There is an area of possible settlement (8 inches maximum) of the upstream edge of the top of the dike at approximately Station

22+50. There are wheel ruts all along the top with bare earth in places (Photo C-12). The top width is 12 feet.

2. Upstream Face: The upstream face is a grassed earth slope (Photos C-11, C-15, C-17). An erosion gully (up to 1.0 foot deep by 1.5 feet wide) has formed below a concrete pad next to the principal spillway vent inlet (Photo C-19).

   There is an overgrown channel along the upstream side of the dike at the northern end which carries water from north of Route 44 into the reservoir (Photo C-11). The upper portion of this channel is higher than the top of the dike and it appears possible that high discharges could flow both in the channel and over the top of the dike. The as-built plans indicate a 10 foot wide trapezoidal channel approximately 2 to 3 feet deep.

3. Downstream Face: The downstream face is a grassed earth slope (Photos C-14, C-16). There is an area of possible seepage (no visible flow) and minor sloughing at the base of the embankment at approximately Station 8 (Photo C-13). There are numerous small animal burrows and riprap outcrops along the rockfill area between Stations 10 and 22 (Photo C-14). Sloughing is occurring at the riprap around the principal spillway outlet (Photo C-21).

4. Principal Spillway: The principal spillway consists of a reinforced concrete riser and uncontrolled 30 inch reinforced concrete pipe extending through the Dike. These concrete structures are in good condition. The inside dimensions of the riser are 3.5 feet by 4 feet. The riser is protected by an angle iron trash rack (Photo C-20). The pipe outlets to a riprap stilling pool (Photo C-22).

5. Emergency Spillway: The emergency spillway is a 90 foot wide grassed channel with side slopes of 3H:1V and is approximately 500 feet long (Photo C-18). There are vehicle ruts on the floor and sides of the channel (Photo C-17). There is a damp area with cattails in the floor along the toe of the eastern embankment near the downstream end. This is probably due to groundwater seepage from the hillside in which the easterly spillway wall was excavated. Although damp, no moving water was noted in this area during the inspection.

d. Dike No. 2:

1. Crest: The dike consists of an earth embankment with no evidence of misalignment or settlement (Photo C-23). The top is 12 feet wide and contains only minor wheel paths.
2. Upstream Face: The upstream face is a grassed earth slope (Photo C-24). No animal burrows or erosion were noted.
3. Downstream face: The downstream face is a grassed earth slope (Photo C-23). No animal burrows or erosion were noted.

e. Reservoir Area:

There is no permanent reservoir except for small sediment pools at each principal spillway inlet. The majority of the reservoir area is woodland. There is a 25 acre swamp between the Main Dam and Diversion Dike (Overview Photo). No unusual geological features were noted that could be expected to adversely affect the embankments or appurtenant structures.

f. Downstream Channel:

The downstream channels consist of short excavated earth channels which extend to existing streams (Photo C-10, Main Dam) (Photo C-22, Diversion Dike).

3.2 Evaluation

Based on the visual inspection, the Talcott Reservoir structures appear to be in GOOD condition overall and there were no major areas of distress noted. Specific areas of concern that were noted are:

a. The erosion due to vehicle trespass.

b. The animal burrows in the embankments.

c. The apparent inadequacy of the discharge capacity of the channel at the north end of the Diversion Dike.

d. The sloughing of the downstream face of the Diversion Dike around the outlet and the minor sloughing near Station 8.

e. The holes in the downstream end of the emergency spillway at the Main Dam.

It should be noted that this floodwater retarding reservoir was not filled at the time of inspection and

thus the adequacy of the structure with regard to the functioning of the blanket and toe drain and also with regard to potential seepage problems could not be fully assessed. The reservoir should be visited by a qualfied registered engineer when floodwaters are being impounded to check for problem areas. A record of maximum water levels should be kept fo: reference purposes.

SECTION 4

OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures

a. General:

There are presently no formal operational procedures for this facility.

b. Description of Any Warning System in Effect:

There is a formal written "Flood Emergency Plan" in effect for this facility. During a flood "watch", the structures are inspected to insure that the outlets are clear and free of debris. During a flood "warning", State personnel visit the site periodically (2-3 hours) and report on unusual situations. In the event of an emergency situation, the field inspector would call the State Dam Safety Engineer and a decision would be made as to further action to be taken. A copy of the applicable portions of this flood emergency plan is included in Appendix B.

4.2 Maintenance Procedures

a. General:

The grass cover is mowed on an annual basis. Other maintenance such as painting the track racks and repairing erosion areas is performed on an "as needed" basis based on the findings of the semi-annual inspections.

b. Operating Facilities:

Maintenance of the principal and emergency spillways is as described above in Paragraph 4.2a.

4.3 Evaluation

The operational and maintenance procedures are generally satisfactory, but there are areas requiring improvement.

The formal written flood emergency plan should be amended to include downstream warning procedures.

SECTION 5

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General

The Talcott Reservoir structures will create an impoundment with a total storage capacity of 826 ac.-ft. at elevation 452.5, the emergency spillway crest elevation. Each foot of depth in the reservoir above the emergency spillway crest can accommodate approximately 66 ac.-ft. The emergency spillways are grassed earth channels with a total width of 130 feet and a crest 5.5 feet below the top of the dam. The drainage area is 1.61 square miles and stream and basin slopes are moderate, 5 percent to 10 pecent, respectively.

5.2 Design Data

a. Original design data (Standard SCS Design Methods) is available for this watershed and the structures of the Talcott Reservoir. To verify existing design information, USGS topographic maps (Scale 1" = 2000') were utilized to develop hydrologic parameters such as drainage area, basin length, time of concentration, and other runoff characteristics. Surface area and storage values were verified and taken from the original design data. Some of the pertinent hydraulic design data was confirmed by actual field measurements at the time of visual inspection.

b. The original design discharge for the facility is 1780 cfs with a corresponding freeboard of 2.5 feet.

c. Outflow values (routing procedures) and dam overtopping analyses were computed in accordance with the guidelines developed by the Corps of Engineers. Judgment was used in calculating final values outlined in this report, which are quite approximate and should not be considered a substitute for actual detailed analysis.

5.3 Experience Data

Historical data for recorded reservoir levels is not available for this dam.

5.4 Test Flood Analysis

Recommended Guidelines for the Safety of Dams by the Corps of Engineers were used for the selection of the "Test Flood". This project is classified as HIGH hazard and INTERMEDIATE size. Guidelines indicate that the Probable

Maximum Flood (PMF) be used as the "Test Flood" for these classifications. The watershed has a total area of 1.61 square miles. Snyder's lag was calculated to be 2.9 hours and a Snyder peaking coefficient of 0.625 was used. The 200 square mile - 24 hour Probable Maximum Precipitation (PMP) is 21.5 inches. The flood hydrograph package, HEC-1 computer program, developed by the Corps of Engineers was utilized to develop the inflow hydrograph, route the flood through the reservoir and for the dam overtopping analysis. A "Test Flood" inflow equal to the PMF was calculated to be 4050 cfs (2510 csm) and 1/2 the PMF has an inflow value of 2020 cfs (1260 csm).

The emergency spillway capacity is hydraulically adequate to pass the "Test Flood" (PMF) and overtopping of the structures will not occur. The maximum outflow capacity of the project without overtopping the structures is 5400 cfs. This corresponds to 203 percent of the test flood outflow. The maximum outflow discharge value for the "Test Flood" is 2670 cfs corresponding to a depth of flow over the emergency spillways of 3.7 feet and a freeboard of 1.8 feet. A spillway rating curve, outlet rating curve and a stage-storage curve are included in Appendix D of this report.

At the emergency spillway crest elevation of 452.5, the capacity of the two 30 inch outlet structures is 120 cfs. It will require approximately 5.5 days to empty the reservoir assuming a water surface initially at the emergency spillway crest.

The reservoir was assumed to be initially empty for the test flood analysis. It was also assumed that no blockage of the spillways occurred. The affect of tailwater was not considered.

5.5 Dam Failure Analysis

a. General:

These structures are classified as HIGH hazard structures. Failure discharge could cause damage and the possible loss of more than a few lives due to high velocities, impact from debris, and flooding to numerous residential homes and buildings along the downstream channels in West Hartford. These homes and buildings range from approximately 0 feet to 10 feet above normal brook levels.

The calculated failure discharges are 28,000 cfs (Main Dam), 57,000 cfs (Diversion Dike) and 4200 cfs (Dike No. 2) at pool levels equal to the emergency spillway crest. The assumed breach lengths are 140 feet (Main Dam), 280 feet (Diversion Dike) and 50 feet (Dike No.

2). Water surface elevations due to structure failure are listed in Appendix D on Pages D-19, D-29 and D-39.

b. Main Dam:

The pre-failure flow downstream would be the principal spillway flow of 75 cfs, corresponding to a depth of flow of approximately 2 feet. No structures would be inundated by this pre-failure flow. The failure impact area has been extended downstream 29,000 feet to North Main Street. Numerous homes in this impact area may be inundated by from 2 to 10 feet above ground level. Hartford Reservoirs Nos. 2, 5 and 1 may be overtopped by failure of the Main Dam. Additional damage is possible downstream.

c. Diversion Dike:

The pre-failure flow downstream would be the principal spillway flow of 45 cfs (lower than Main Dam flow due to oriface plates), corresponding to a depth of flow of approximately 2 feet. No structures would be inundated by this pre-failure flow. The failure impact area has been extended downstream 20,000 feet to North Main Street. Numerous homes in this impact area may be inudated by from 1 to 3 feet above ground level. Additional damage is possible downstream.

d. Dike No. 2:

There would be no pre-failure flow for the dike. The failure impact area has been extended downstream 19,000 feet to North Main Street. Numerous homes in this impact area may be inundated by from 1 to 3 feet above ground level. Additional damage is possible downstream.

SECTION 6

EVALUATION OF STRUCTURAL STABILITY

6.1 Visual Observation

a. General:

The visual inspection revealed no signs of major physical distress. It should be noted that this floodwater retarding reservoir was not filled at the time of inspection and thus the adequacy of the structures with regard to the functioning of the blanket and toe drains and also with regard to potential seepage problems could not be fully assessed.

b. Main Dam:

The earth embankment and emergency spillway appear in good general condition. The top is level and the embankment faces are well vegetated and appear stable.

There is a series of large holes on the floor of the emergency spillway near the discharge end. These range in size up to 7 feet by 10 feet in area and 3 feet deep. These large holes appear to have animal holes at their bottom. Several other large animal burrows were noted on the embankment.

c. Diversion Dike:

The earth embankment and emergency spillway appear in good general condition. The most significant visual observations related to the stability of the embankment are the apparent 8 inch low spots in the embankment crest in the vicinity of Stations 22 and 23 and the headward erosion of the toe of the embankment in the area of the 30 inch RCP outlet pipe and cradle.

d. Dike No. 2:

The earth embankment appears in good general condition. The top is level and the embankment faces are well vegetated and appear stable.

6.2 Design and Construction

The design information available consists of the design calculations and report, as-built construction plans, and construction reports. The location of this information is given in Appendix B-1.

6.3 Post-Construction Changes

There have been no post-construction changes to the structures since completion in 1964.

6.4 Seismic Stability

The structures are in Seismic Zone 1 and hence do not require evaluation for seismic stability according to the Corps of Engineers Recommended Guidelines.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition:

Based on the visual inspection, past performance and hydraulic/hydrologic evaluation, the Talcott Reservoir structures and appurtenances are judged to be generally in GOOD condition. Items of concern that should be addressed as a result of this inspection are listed in Sections 7.2 and 7.3

b. Adequacy:

The information available is such that the assessment of the safety of the structures should be based on the visual inspection results, the past operational performance and the design information that is available.

c. Urgency:

The recommendations and remedial measures described below should be implemented by the owner within two years after receipt of this Phase I Inspection Report, except as noted.

7.2 Recommendations

It is recommended that the owner engage a qualified registered engineer to carry out the following actions and that his recommendations be implemented.

a. Main Dam:

1. Investigate the cause of the holes at the outlet end of the emergency spillway and design repairs as necessary within one year.

b. Diversion Dike:

1. Investigate the low spot in the top of the embankment in the vicinity of bend between Stations 22 and 23 and design repairs as necessary.

2. Investigate the discharge adequacy of the drainage channel which runs along the upstream side of the embankment along that portion adjacent to Route 44 within one year.

3. Investigate the erosion and sloughing around the outlet pipe and design repairs as necessary within one year.

4. Investigate the minor sloughing in the wet area at the downstream toe of the embankment in the vicinity of Station 8 and design repairs as necessary.

c. General:

1. The reservoir should be visited when floodwaters are being impounded to check for problem areas. A record of maximum water levels should be kept for reference purposes.

7.3 Remedial Measures (Operation and Maintenance Procedures)

a. Main Dam:

1. Repair the minor sloughing in the vicinity of the outlet pipe and cradle, and cut the brush in the riprap in this area.

2. Monitor the seepage through the riprap area at the outlet pipe.

b. Diversion Dike:

1. Repair the erosion gully on the upstream face which originates from the concrete pad below the vent pipe.

2. Remove all brush from the riprapped stilling pool.

3. Clear the brush from the drainage channel along the upstream side of the embankment along that portion adjacent to Route 44.

c. General:

1. Repair vehicle tracks and footpaths on the embankments and emergency spillways.

2. During the semi-annual inspections, identify all animal burrows and repair as necessary.

3. Recreational vehicle access to the structures should be eliminated.

4. Continue the semi-annual technical inspection program.

5. The existing formal written flood emergency plan should be amended to include downstream warning procedures.

7.4 Alternatives

There are no practical alternatives to the above stated recommendations.

APPENDIX A

INSPECTION CHECK LIST

INSPECTION CHECK LIST

PARTY ORGANIZATION

PROJECT Talcott Reservoir Dam
- Main Dam
- Diversion Dike
- Dike No. 2

DATE November 17, 1980

TIME 9:00 a.m. - 4:00 p.m.

WEATHER Partly Cloudy

W.S. ELEV. _____ U.S. _____ DN.S.

PARTY:

1. R. Johnston, JPPA
2. J. Hewes, JPPA
3. J. Walsh, Baystate Environmental Consultants, Inc.
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

	PROJECT FEATURE	INSPECTED BY	REMARKS
1.	Hydraulics	R. Johnston	
2.	Structural	J. Hewes	
3.	Geotechnical	J. Walsh	
4.			
5.			
6.			
7.			
8.			
9.			
10.			

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Main Dam NAME

DISCIPLINE NAME

AREA EVALUATED		CONDITION
DAM EMBANKMENT		
Crest Elevation	458.0	Good grass cover. Wheel ruts.
Current Pool Elevation	435.0	Principal spillway riser crest.
Maximum Impoundment to Date		Unknown
Surface Cracks		None observed
Pavement Condition		N/A
Movement or Settlement of Crest		None observed
Lateral Movement		None observed
Vertical Alignment		Good
Horizontal Alignment		Good
Condition at Abutment and at Concrete Structures		Good. Trees close to upstream embankment.
Indications of Movement of Structural Items on Slopes		None observed.
Trespassing on Slopes		Yes. Vehicle ruts and campfire.
Vegetation on Slopes		Good grass cover.
Sloughing or Erosion of Slopes or Abutments		Numerous animal burrows. Depression in downstream face near emergency spillway.
Rock Slope Protection - Riprap Failures		Riprap around outlet is overgrown. Minor sloughing.
Unusual Movement or Cracking at or near Toes		None observed
Unusual Embankment or Downstream Seepage		Water in riprap around outlet, 1 foot higher than outlet pool.
Piping or Boils		None observed
Foundation Drainage Features) Toe Drains)		None observed. Plans show granular filter drains.
Instrumentation System		None observed

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Diversion Dike NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
DIKE EMBANKMENT	
Crest Elevation 458.0	Good grass cover. Wheel ruts.
Current Pool Elevation 435.0	Principal spillway riser crest.
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	N/A
Movement or Settlement of Crest	Possible slight settlement (less than 8 inches) at Station 22+50.
Lateral Movement	None observed
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good. Sloughing around principal spillway outlet.
Indications of Movement of Structural Items on Slopes	None observed.
Trespassing on Slopes	Yes. Vehicle ruts.
Vegetation on Slopes	Good grass cover.
Sloughing or Erosion of Slopes or Abutments	Numerous animal burrows.
Rock Slope Protection - Riprap Failures	Riprap around outlet sloughed and overgrown.
Unusual Movement or Cracking at or near Toes	Minor undulations along downstream face in rock fill areas.
Unusual Embankment or Downstream Seepage	Active seepage at downstream toe at Station 8+00.
Piping or Boils	None observed
Foundation Drainage Features) Toe Drains)	Rock fill observed. Plans also show granular filter drains.
Instrumentation System	None observed.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Dike No. 2 NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
DIKE EMBANKMENT	
Crest Elevation 458.0	Good grass cover
Current Pool Elevation	N/A
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	N/A
Movement or Settlement of Crest	None observed
Lateral Movement	None observed
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good. No structures.
Indications of Movement of Structural Items on Slopes	N/A
Trespassing on Slopes	Yes. Minor wheel ruts.
Vegetation on Slopes	Good grass cover.
Sloughing or Erosion of Slopes or Abutments	None observed.
Rock Slope Protection - Riprap Failures	N/A
Unusual Movement or Cracking at or near Toes	None observed
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None observed
Foundation Drainage Features Toe Drains	None observed. Plans show granular filter drain.
Instrumentation System	None observed.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Main Dam NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE	
a. Approach Channel	Small pond
Slope Conditions	Grass and cattails.
Bottom Conditions	Cattails.
Rock Slides or Falls	None observed
Log Boom	None observed
Debris	None observed
Condition of Concrete Lining	N/A
Drains or Weep Holes	N/A
b. Intake Structure	Concrete riser and angle iron trash rack.
Condition of Concrete	Under water. Appears good.
Stop Logs and Slots	None observed
Condition of Trash Rack	Good

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Diversion Dike NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE	
a. Approach Channel	Earth channel
Slope Conditions	Good. Grass and brush.
Bottom Conditions	Good
Rock Slides or Falls	None observed
Log Boom	None observed
Debris	None observed
Condition of Concrete Lining	N/A
Drains or Weep Holes	N/A
b. Intake Structure	Concrete riser and angle iron trash rack.
Condition of Concrete	Under water. Appears good.
Stop Logs and Slots	None observed.
Condition of Trash Rack	Good

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Main Dam NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - TRANSITION AND CONDUIT	30 Inch Reinforced Concrete Pipe
General Condition of Concrete	Good
Rust or Staining on Concrete	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Cracking	Last downstream pipe joint has minor crack.
Alignment of Monoliths	Good
Alignment of Joints	Good
Numbering of Monoliths	12 pipe sections (from plans)
	NOTE: Pipe observed from outlet. Water flowing through conduit during inspection.
	NOTE: There is a vent for the conduit which extends to an outlet at the upstream face of the embankment. Exposed portion of the vent is in good condition.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Diversion Dike NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - TRANSITION AND CONDUIT	30 Inch Reinforced Concrete Pipe
General Condition of Concrete	Good
Rust or Staining on Concrete	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Cracking	None observed
Alignment of Monoliths	Good
Alignment of Joints	Good
Numbering of Monoliths	12 pipe sections (from plans)
	NOTE: Pipe observed from outlet. Water flowing through conduit during inspection.
	NOTE: There is a vent for the conduit which extends to an outlet at the upstream face of the embankment. Exposed portions of the vent are in good condition. There is an erosion gully (up to 1 foot deep) below the vent apparently caused by a concrete pad at the vent outlet.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Main Dam NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	Free Outlet. 30 Inch RCP.
General Condition of Concrete	Good
Rust or Staining	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Visible Reinforcing	None observed
Any Seepage or Efflorescence	Efflorescence at joint crack.
Condition at Joints	Last downstream pipe joint has minor crack.
Drain holes	None observed
Channel	Stilling pool then natural stream.
Loose Rock or Trees Overhanging Channel	Trees in woods.
Condition of Discharge Channel	Brush and trees along channel.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Diversion Dike NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	Free Outlet. 30 Inch Pipe.
General Condition of Concrete	Good
Rust or Staining	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Visible Reinforcing	None observed
Any Seepage or Efflorescence	None observed
Condition at Joints	Good
Drain holes	None observed
Channel	Stilling pool then excavated channel approx. 85 feet long. Trees in woods beyond excavated channel.
Loose Rock or Trees Overhanging Channel	
Condition of Discharge Channel	Brush and grass in channel.
	NOTE: Sloughing of riprap and embankment around outlet is occuring.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Main Dam NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	Earth Emergency Spillway
a. Approach Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Approach Channel	Grassed
b. Weir	
General Condition of Concrete	NOTE: Weir is a 30 foot long grassed level section between approach and discharge channels.
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	Grassed channel.
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	Trees at sides of channel.
Floor of Channel	Grassed. Several large depressions at downstream end.
Other Obstructions	Downstream end of spillway is a 2H:1V 15 foot high slope containing trees and brush.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980

PROJECT FEATURE Diversion Dike NAME _____

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	Earth Emergency Spillway
a. Approach Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Approach Channel	Grassed
b. Weir	NOTE: Weir is a 30 foot long grassed level section between approach and discharge channels.
General Condition of Concrete	
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Channel	Grassed
Other Obstructions	Woods at end of channel
	NOTE: Minor sloughing and damp area noted at base of east spillway embankment.

APPENDIX B

ENGINEERING DATA

APPENDIX B-1

DESIGN, CONSTRUCTION AND MAINTENANCE RECORDS

Location		Items
Mr. Victor J. Galgowski Dam Safety Engineer Water Resources Unit Department of Environmental Protection State of Connecticut State Office Building Hartford, Connecticut 06115	•	1. As Built Plans
		2. State Inspection Reports
	•	3. Rating Curves
	•	4. Flood Emergency Plan
Mr. Whitney T. Ferguson, Jr. State Conservation Engineer Soil Conservation Service U.S. Department of Agriculture Mansfield Professional Park Storrs, Connecticut 06268		1. As Built Plans
	•	2. Design Report
		3. Design Calculations
		4. Construction Inspection Reports
	•	5. Information Storage and Retrieval Form

• Indicates material contained in this Phase I Inspection Report.

DESIGN REPORT

SOUTH BRANCH PARK RIVER WATERSHED
SITE NO. 1, TALCOTT RESERVOIR
HARTFORD COUNTY, CONNECTICUT

This project is located in Hartford County, in West Hartford, Connecticut. The transparent overlay (sheet 4 of this report) together with the Avon, Connecticut quadrangle published by the U.S. Geological Survey, may be used to locate the site.

This is a class (c) flood prevention project (see Washington Engineering Memorandum SCS-27) and was designed in accordance with Soil Conservation Service criteria.

The project is composed of a diversion channel and four embankments, referred to as:

1. Main dam
2. Diversion dike
3. Dike No. 2
4. Low flow barrier

The embankments are earthfill with cutoff trenches to dense glacial material or rock. They contain drainage systems consisting of blanket type embankment drains and foundation toe drains.

The diversion channel diverts the flow from a drainage area of 1.07 square miles into the reservoir area.

The purpose of this project is to reduce flooding downstream by providing temporary storage for the runoff from 1.60 square miles. The temporary storage is released gradually thru two principal spillway systems.

Each principal spillway system utilizes a 3.5' x 4' reinforced concrete riser and a 30-inch reinforced concrete water pipe which has a vented orifice restriction at the inlet to the pipe. A low flow barrier in the channel between the main dam and the diversion dike forces the majority of the base flow thru the auxiliary principal spillway in the diversion dike.

There are two emergency spillways consisting of a 90-foot wide spillway cut thru the right abutment of the diversion dike and a 40-foot wide spillway of compacted fill on the left abutment of the main dam. The emergency spillways will not operate until the runoff exceeds 12 inches from a storm pattern similar to that caused by hurricane "Diane."

The inflow hydrographs used in the design of these structures were developed by the method described in the National Engineering Handbook, Section 4, Hydrology. The flood routing procedure used in the design is given in the National Engineering Handbook, Section 5, Hydraulics.

REFERENCE:	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ENGINEERING & WATERSHED PLANNING UNIT UPPER DARBY, PENNSYLVANIA	DRAWING NO. CN-418-R SHEET 1 OF 5 DATE 3/25/63

DESIGN REPORT

The following table gives the results of the hydrologic and hydraulic determinations:

Factor Which Determines Stage	Surface Area Acres	Runoff in Inches	Peak Inflow c.f.s.	Peak Outflow c.f.s.	Elev. of Maximum Stage	Storage in Ac.-Ft.	Element of Structure Determined by Maximum Stage
50-year sediment accumulation	24.20	>.08	-	-	435.0	>6.7	Crest of riser
Storm "Diane" 100-year frequency storm moisture condition	65.7	12.0	1860	129	452.5	826[1]	Crest of emergency spillway
1.75x6-hour point rainfall moisture condition II	71.5	16.3[2]	4870	1775	455.4	1015[1]	Design high water
2.5x6-hour point rainfall moisture condition II	76	25.3[2]	6330	3125	456.7	1115[1]	Check top of dam
2.6' freeboard	-	-	-	+2.6	458.0	1205[1]	Top of dam

[1]Storage above riser crest (elev. 435.0).
[2]Runoff from total drainage area.

The time to empty 100 percent of the flood storage is 5.5 days.

The geology report and Soil Mechanics Laboratory report were used to determine the adequacy of the design. Copies of these reports are attached.

The following publications were used in the design of this dam:

NE Handbook No. 5, Hydraulics
NE Handbook No. 4, Hydrology
NE Handbook No. 6, Structural Design
Technical Releases Nos. 2, 5 and 10

REFERENCE:	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ENGINEERING & WATERSHED PLANNING UNIT UPPER DARBY, PENNSYLVANIA	DRAWING NO. CN-418-R SHEET 2 OF 5 DATE 3/25/63

DESIGN REPORT

Copies of these publications may be obtained from Mr. H. Paul Tedrow State Conservationist, USDA, Soil Conservation Service, Storrs, Connecticut.

Concurred:

Gerald E. Oman
Design Engineer

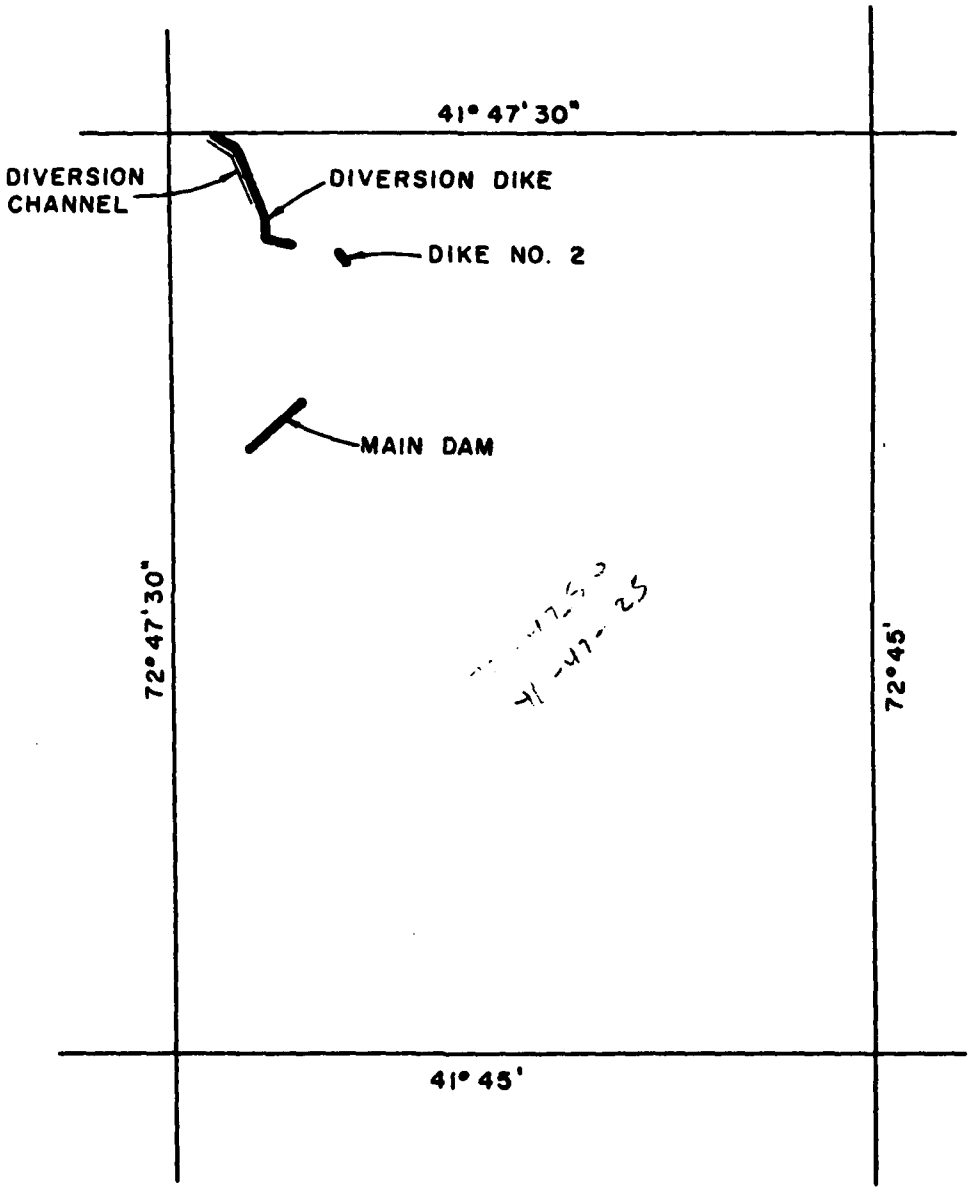
T. R. Wire
State Conservation Engineer

Vincent McKeever
Hydrologist

Robert F. Fonner
Geologist

REFERENCE:	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ENGINEERING & WATERSHED PLANNING UNIT UPPER DARBY, PENNSYLVANIA	DRAWING NO. CT-418-2 SHEET 3 OF 5 DATE 3/29/63

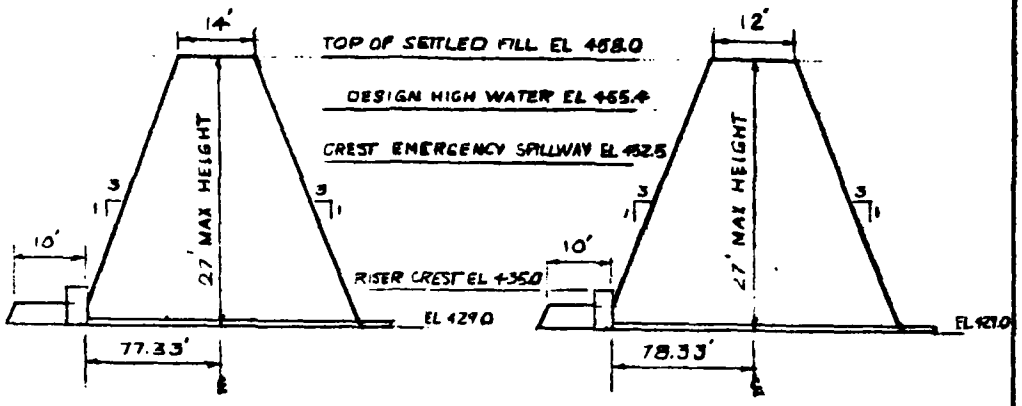
DESIGN REPORT



REFERENCE:		DRAWING NO.
USGS AVON 7.5 MIN. QUAD.	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ENGINEERING & WATERSHED PLANNING UNIT UPPER DARBY, PENNSYLVANIA	CN-418-R SHEET 4 OF 5 DATE MAR. 1963

DESIGN REPORT

Summary Sheet



Typical X-Section

I.	Watershed data		
	A. Structure class	(a)	
	B. Drainage area	1.60	Ac.
	C. Time of concentration - T_c	See Hydrology Section	Hrs.
	D. Hydrologic curve number - CN		
	1. Moisture condition II	71	
	2. Moisture condition III	88	
II.	Principal spillway		
	A. Conduit		
	1. Size (I.D.)	30	In.
	2. Length	182	Ft.
	B. Riser		
	1. Size	3.5x4.0	Ft.
	2. Height	4	Ft.
	C. Weir length	15	Ft.
	D. Orifice size - depth of 30" pipe - 1.0'(dike),	1.5' (dam)	in.
	E. Pond drain size	None	in.
III.	Emergency spillway		
	A. Width	40 and 90	Ft.
	B. Side slopes	3:1	
	C. Length of level section	30	Ft.
	D. Exit slope	1 - .025; 2 - .026	Ft/Ft.
	E. Maximum velocity at control section (D.H.W.)	1-7.1;2-7.5	Ft/Sec.
	F. Duration of flow (D.H.W.) through emergency spillway	6.2	Hrs.
	G. Frequency of use	100-year	

REFERENCE:	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE ENGINEERING & WATERSHED PLANNING UNIT UPPER DARBY, PENNSYLVANIA	DRAWING NO. CH-415-R SHEET 5 OF 5 DATE 3/25/63

NETSC TEMPORARY FORM
6-13-75

INFORMATION STORAGE AND RETRIEVAL - DAMS PLANNED AND CONSTRUCTED BY SCS

CT-17
SITE ID

IDENTIFICATION AND LOCATION

1. Site 1 Talcott
STRUCTURE DESIGNATION (NAME OR NUMBER)
2. Park River-Conn. River
RIVER BASIN (NAME)
3. South Branch-Park River
WATERSHED (NAME OR UNNAMED)
4. Connecticut
STATE (NAME)
5. Hartford
COUNTY (NAME)
6. West Hartford
TOWNSHIP (NAME)
7. 1
CONGRESSIONAL DISTRICT (NUMBER)
8. Central Connecticut Lowlands
PHYSIOGRAPHIC AREA 1/ (NAME)
9. WP
AUTHORIZATION (WP, FP, RC&D, CO-OP, PILOT)
10. 41 47 25
LATITUDE (DEGREES, MINUTES, SECONDS)
11. 72 47 50
LONGITUDE (DEGREES, MINUTES, SECONDS)
12. 458.0
ELEVATION OF TOP OF DAM (SETTLED FILL-FEET MSL)
13. DATE PLAN APPROVED 1962
14. DATE OF MOST RECENT SUPPLEMENT 1972
(LEAVE BLANK IF NOT SUPPLEMENTED)
15. DATE CONSTRUCTION COMPLETED 1964
(LEAVE BLANK IF NOT COMPLETED)
16. TYPE OF DAM (CIRCLE APPLICABLE) -
(EARTH), ROCK, CONCRETE, OTHER
17. PLANNED PURPOSES (CIRCLE ALL APPLICABLE) -
(FLOOD PREVENTION) RECREATION, FISH & WILDLIFE, MUNICIPAL AND INDUSTRIAL WATER SUPPLY, IRRIGATION, NAVIGATION, HYDRO-ELECTRIC, SEDIMENT CONTROL, LOW FLOW AUGMENTATION, OTHER
18. HAZARD CLASS (A, B, OR C) C
19. EARTHQUAKE ZONE 2/ (0, 1, 2, 3, or 4) 1

SIZE AND CAPACITY

20. DRAINAGE AREA UNCONTROLLED 1030 AC.
(UPSTREAM FROM STRUCTURE)
21. DRAINAGE AREA CONTROLLED ——— AC.
(UPSTREAM FROM STRUCTURE)
22. MAXIMUM FILL HEIGHT 27 FT.
(FROM LOW POINT ON CENTERLINE, BEFORE EXCAVATING, TO TOP OF SETTLED FILL.)
23. CREST LENGTH OF DAM (ALONG CENTERLINE) Dam 1300 / Dike 3125 FT.
24. VOLUME OF FILL 132,000 CU. YD.

25. SUBMERGED SEDIMENT STORAGE 2.6 AC
26. AERATED SEDIMENT STORAGE ——— AC
27. MUNICIPAL AND INDUSTRIAL WATER STORAGE ——— AC
28. RECREATION WATER STORAGE ——— AC
29. FISH AND WILDLIFE STORAGE ——— AC
30. IRRIGATION STORAGE ——— AC.
31. OTHER BENEFICIAL STORAGE ——— AC.
32. TOTAL FLOOD STORAGE 820 AC.
33. TEMPORARY EMERGENCY SPILLWAY STORAGE (BETWEEN CREST OF LOWEST EMERGENCY SPILLWAY AND TOP OF SETTLED FILL)
379 AC.
34. SURFACE AREA OF NORMAL POOL ——— AC.
35. LENGTH OF SHORE LINE OF NORMAL POOL ——— MILES
36. MAXIMUM DEPTH OF NORMAL POOL ——— FT.

PRINCIPAL SPILLWAY FEATURES

37. PRINCIPAL SPILLWAY TYPE (CIRCLE APPLICABLE) -
(PIPE), MONOLITHIC, OPEN CONCRETE STRUCTURE, OTHER
38. IS THERE COLD WATER RELEASE FACILITY? No
39. NUMBER OF STAGES 1 (1 or 2)
40. LOW STAGE CAPACITY ——— CFS
(AT HIGH STAGE PRINCIPAL SPILLWAY CREST)
41. PRINCIPAL SPILLWAY CAPACITY 129 CFS
(AT LOWEST EMERGENCY SPILLWAY CREST)

PRINCIPAL SPILLWAY CONDUIT FEATURES

42. MAJOR PORTION OF CONDUIT IS ON (CIRCLE APPLICABLE) -
ROCK OR (EARTH)
43. TYPE OF ENERGY DISSIPATOR (CIRCLE APPLICABLE) -
IMPACT BASIN, SAF, (PLUNGE POOL) NONE, OTHER
44. CONDUIT SIZE 2.5' (Two)
(LARGEST CONDUIT THROUGH DAM) (DIAM. IN FT. IF ROUND) (HEIGHT AND WIDTH IN FT. IF MONOLITHIC) ALSO SHOW NUMBER OF BARRELS IF MULTI-BARREL
45. INLET TYPE (CIRCLE APPLICABLE) - (CONCRETE-OPEN TOP)
COVERED TOP, HOOD INLET, METAL-OPEN TOP, OTHER
46. HEIGHT OF RISER 4.0 FT.
(FROM TOP OF FLOOR TO TOP OF ANTI-VORTEX)

EMERGENCY SPILLWAY FEATURES

47. PRIMARY EMERGENCY SPILLWAY TYPE (CIRCLE APPLICABLE)
CLOSED CONDUIT, OPEN CONCRETE STRUCTURE, EARTH, VEGETATED, SOFT ROCK, HARD ROCK 3/
48. PRIMARY EMERGENCY SPILLWAY WIDTH 130 ** FT.
(CREST LENGTH FOR CONCRETE)
49. 1 %
PERCENT CHANCE OF USE OF PRIMARY EMERGENCY SPILLWAY

1/ N. M. Fenneman, 1938, Physiography of Eastern United States, McGraw Hill Book Co., New York, N. Y.

2/ See TSC Technical Note - Engineering UD-22.

3/ Soft Rock - Rock that will erode when subjected to flowing water.
Hard Rock - Rock that is resistant to erosion due to flowing water.

EMERGENCY SPILLWAY FEATURES (CONT'D.)

50. 4906 CFS
CAPACITY OF PRIMARY EMERGENCY SPILLWAY (WHEN POOL IS AT TOP OF DAM)

51. 5.5 FT.
DIFFERENCE IN ELEVATION BETWEEN CREST OF PRIMARY EMERGENCY SPILLWAY AND TOP OF DAM

52. SECONDARY EMERGENCY SPILLWAY IS (CIRCLE APPLICABLE)
NONE/ EARTH, VEGETATED, SOFT ROCK, HARD ROCK 3/

53. WIDTH OF SECONDARY EMERGENCY SPILLWAY — FT.

54. CAPACITY OF SECONDARY EMERGENCY — CFS
SPILLWAY (WHEN POOL IS AT TOP OF DAM)

55. — FT.
DIFFERENCE IN ELEVATION BETWEEN CREST OF SECONDARY EMERGENCY SPILLWAY AND TOP OF DAM

OMIT ITEMS 56-59 IF DRAINAGE AREA IS LESS THAN 10 SQUARE MILES

56. BULK LENGTH OF SOFT ROCK 3/ EARTH — FT.
OR VEGETATED SPILLWAY (SEE TR-52 FOR DEFINITION)

57. —
PT OF SURFACE MATERIAL IN EARTH OR VEGETATED SPILLWAY (PREDOMINANT MATERIAL AT OR NEAR SURFACE BEFORE TOP SOILING)

58. —
USCS CLASSIFICATION OF ABOVE MATERIAL

59. — AC. FT.
VOLUME OF OUTFLOW THROUGH VEGETATED OR EARTH SPILLWAY (DURING PASSAGE OF FREEBOARD HYDROGRAPH)

COST DATA

WORK PLAN

60. LAND RIGHTS COST $ 96,089

61. FEDERAL SHARE OF LAND RIGHTS COST $ —

62. CONSTRUCTION COST $ 277,617
(DOES NOT INCLUDE LAND RIGHTS, ENGINEERING AND PROJECT ADMINISTRATION)

63. FEDERAL SHARE OF CONSTRUCTION COST IN PERCENT 100 %

COMPLETED STRUCTURE

64. FINAL CONSTRUCTION COST $ 256,000

ADDITIONAL DATA REQUIRED FOR U.S. REGISTER OF DAMS (LEAVE BLANK FOR DAMS LESS THAN 33 FT. IN HEIGHT)

65. Talcott
POPULAR NAME OF DAM

66. —
NAME OF RESERVOIR

67. NEAREST CITY OR TOWN West Hartford

68. TYPE OF DAM IF CONCRETE (CIRCLE APPLICABLE)
BUTTRESS, ARCH, MULTI-ARCH

69. IS DISCHARGE THROUGH PRINCIPAL SPILLWAY CONTROLLED BY GATES? NO

70. ESTIMATED COMPLETION DATE (IF UNDER CONSTRUCTION) 1964

71. OWNER State of Connecticut

72. ENGINEERING BY Soil Conservation Servic

73. CONSTRUCTION BY Mark Construction Co.
(CONSTRUCTION CONTRACTOR)

74. ABOVE DATA FURNISHED BY Joseph Polulech
(NAME)

75. DATE DATA FURNISHED 11/75

76. REMARKS * Structure designed with two (2) principal spillways. One in the dam and one in the dike.
** Two Emergency Spillways - one 90' B.W. and one 40' B.W.

3/ Soft Rock - Rock that will erode when subjected to flowing water.
Hard Rock - Rock that is resistant to erosion due to flowing water.

FLOOD EMERGENCY PLAN PP 6
CONN. DEPT. ENVIR. PROT.

will commence. The pump and hoses are stored in Building No. 17.

d. All gates will be inspected to insure proper closing without clogging by debris.

e. Screen well house openings will be closed. The closure will consist of

(i) stoplogging the one entrance door into the structure,

(ii) closing the maintenance trough opening with the steel plate mounted outside the building, and

(iii) the sluice gate on the opening under the well house floor will be secured.

The flood works are on the property of Chase Brass and Cooper Co., Inc., and AMTRAK. Chase Brass has agreed to assist in maintaining and operating these works. The individuals assigned to these responsibilities from Chase Brass are as follows:

L. Conard	756-9448
B. Kleinselbeck	754-8229

(A guard is on duty 24 hours at the plant.)

5. Soil Conservation Service Flood Control Structures: The dams listed below are dry flood control dams which are owned and operated by the State of Connecticut. Their sole purpose is to impound and slowly release flood water. In order to properly operate, it is imperative the culverts be clear and free of debris. For this reason, upon notification of a watch the structures should be inspected to insure clear outlets. During a warning the dams will be inspected at approximately 2 - 3 hour intervals. Inspections should consist of

a. estimating the height of water,

b. looking for piping failures, sand boils, or other abnormal leakage, especially in the vicinity of the culvert outlets, and

c. looking for the development of slope sloughing or other structural problems.

Findings of each inspection should be reported immediately to the F.E.O.C.

FLOOD EMERGENCY PLAN PP 7
CONN. DEPT. ENVIR PROT.

Crew Assignments:

Bloomfield Reservoir, Site 3, Tunxis Ave. Bloomfield

Bloomfield Reservoir, Site 3a, Tunxis Ave., Bloomfield

Blue Hills Reservoir, Filley Street, Bloomfield

Wintonbury Reservoir, Filley Street, Bloomfield

Coldspring Reservoir, Simsbury Road, Bloomfield

Crew:	Home	Office
Marilyn Aarrestad	658-5593	242-1158
Thomas Noonan	247-1847	242-1158
Calvin Innes	653-2996	242-1158

Thousand Acre Swamp, New Marlboro, Massachusetts

Westside Reservoir, Westside Raod, Norfolk

Norfolk Reservoir, Route 44, Norfolk

Wood Creek Reservoir, Route 272, Norfolk

Whiting River Reservoir, Canaan Valley Road, North Canaan

Crew:		
Stanley Civco	542-5423	SAME

Roaring Brook, Unionville

South Reservoir, Farmington Avenue, West Hartford

Burnt Hill Reservoir, Tunxis Road, West Hartford

Bugbee Reservoir, Hickory Lane, West Hartford

▷ Talcott Reservoir, Route 44, West Hartford

Crew:		
Robert Corbidge	673-3955	677-1819
Phillip Johnson	673-2943	677-1819
Ransom Watson	677-1819	677-1819

6. Highland Lake Flood Control Works: As part of the Flood works for Winsted, the dam at the north end of Highland Lake can be sandbagged prior to flooding to increase the storage capacity

MINERAL TO TAKE CHARGE

APPENDIX B-2

COPIES OF PAST INSPECTION REPORTS

SUPERVISION OF DAMS
INVENTORY DATA

2

Inventoried By _____

Date _____

MAIN DAM

~~CT 45~~ #1

Name of Dam or Pond Talcott Reservoir DAM #2 ~~Site #1~~

Code No. WH 13

Nearest Street Location Albany Ave.

Town West Hartford LAT. 41° 46.7'

U.S.G.S. Quad. Avon LONG. 72° 47.2'

Name of Stream unnamed trib of Trout Brook

Owner State of Conn.

Address Dept. of Agriculture & Natural Resources
State Office Bldg.
Hartford

Pond Used For flood control DA 1.615M

Dimensions of Pond: Width _____ Length _____ Area 24

Total Length of Dam 1240' Length of Spillway ~~462~~ 462'

Location of Spillway CENTER

1966 Height of Pond Above Stream Bed 13.5

Height of Embankment Above Spillway 5.5

Type of Spillway Construction RISER + RCP

Type of Dike Construction Earth

Downstream Conditions _____

Summary of File Data _____

Remarks D. Alter 1032 H

SUPERVISION OF DAMS
INVENTORY DATA

Inventoried By _____

Date _____

H-13
~~CT-490~~

DIVERSION DIKE

Name of Dam or Pond TALCOTT RES. DAM #1

Code No. H-23

Nearest Street Location RT. 44

Town W. HTFD. LAT. 41°47.2'

U.S.G.S. Quad. AVON LONG. 72°47.1'

Name of Stream Unnamed Tr. to TROUT BRK.

Owner D.E.P

Address _____

_____

Pond Used For FLOOD CONTROL D.A 1.605Mi

Dimensions of Pond: Width _____ Length _____ Area 40

Total Length of Dam 3000' Length of Spillway _____

Location of Spillway EAST END

1966

Height of Pond Above Stream Bed 13.5

Height of Embankment Above Spillway 5.5

Type of Spillway Construction RISER & RCP

Type of Dike Construction EARTH

Downstream Conditions _____

_____

Summary of File Data _____

_____

Remarks _____

_____

_____

_____

Would Failure Cause Damage? _____ Class _____

APPENDIX B-3

RECORD DRAWINGS AND SKETCHES

SOUTH BRANCH PARK RIVER WATERSHED PR

FLOODWATER RETARDING SITE NO 1

TALCOTT RESERVOIR

DRAINAGE AREA	1032	ACRES
TOTAL STORAGE TO EMERGENCY SPILLWAY CREST	820	ACRE FT.
WATER SURFACE AREA	24.2	ACRES
HEIGHT OF DAM	27	FEET
VOLUME OF FILL	132,050	CUBIC YARDS

BUILT UNDER THE WATERSHED PROTECTION AND FLOOD PREVENTION ACT

BY

COMMISSIONER OF AGRICULTURE AND NATURAL RESOURCES
STATE OF CONNECTICUT

WITH THE ASSISTANCE OF THE

SOIL CONSERVATION SERVICE

OF THE

UNITED STATES DEPARTMENT OF AGRICULTURE

1963

INDEX

R WATERSHED PROJECT

ING SITE NO 1

RVOIR

1032	ACRES
820	ACRE FT
24.2	ACRES
27	FEET
132,050	CUBIC YARDS

HED PROTECTION AND
TION ACT

AND NATURAL RESOURCES
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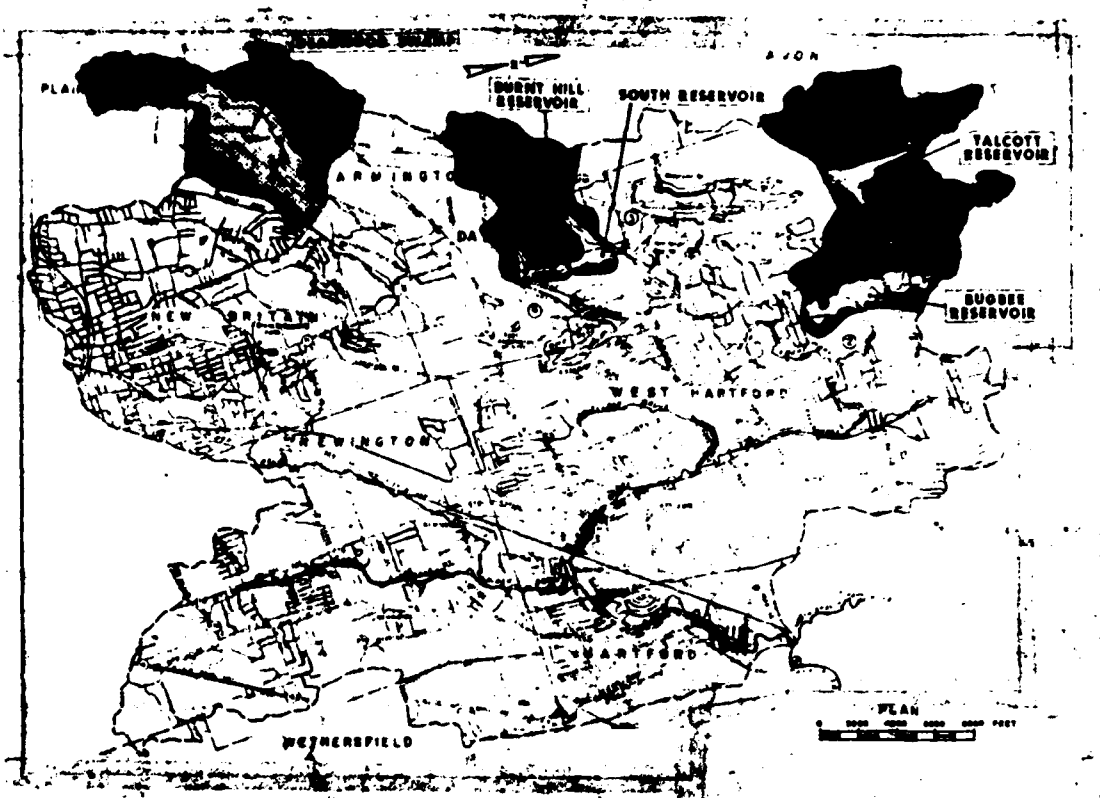
ON SERVICE

NT OF AGRICULTURE



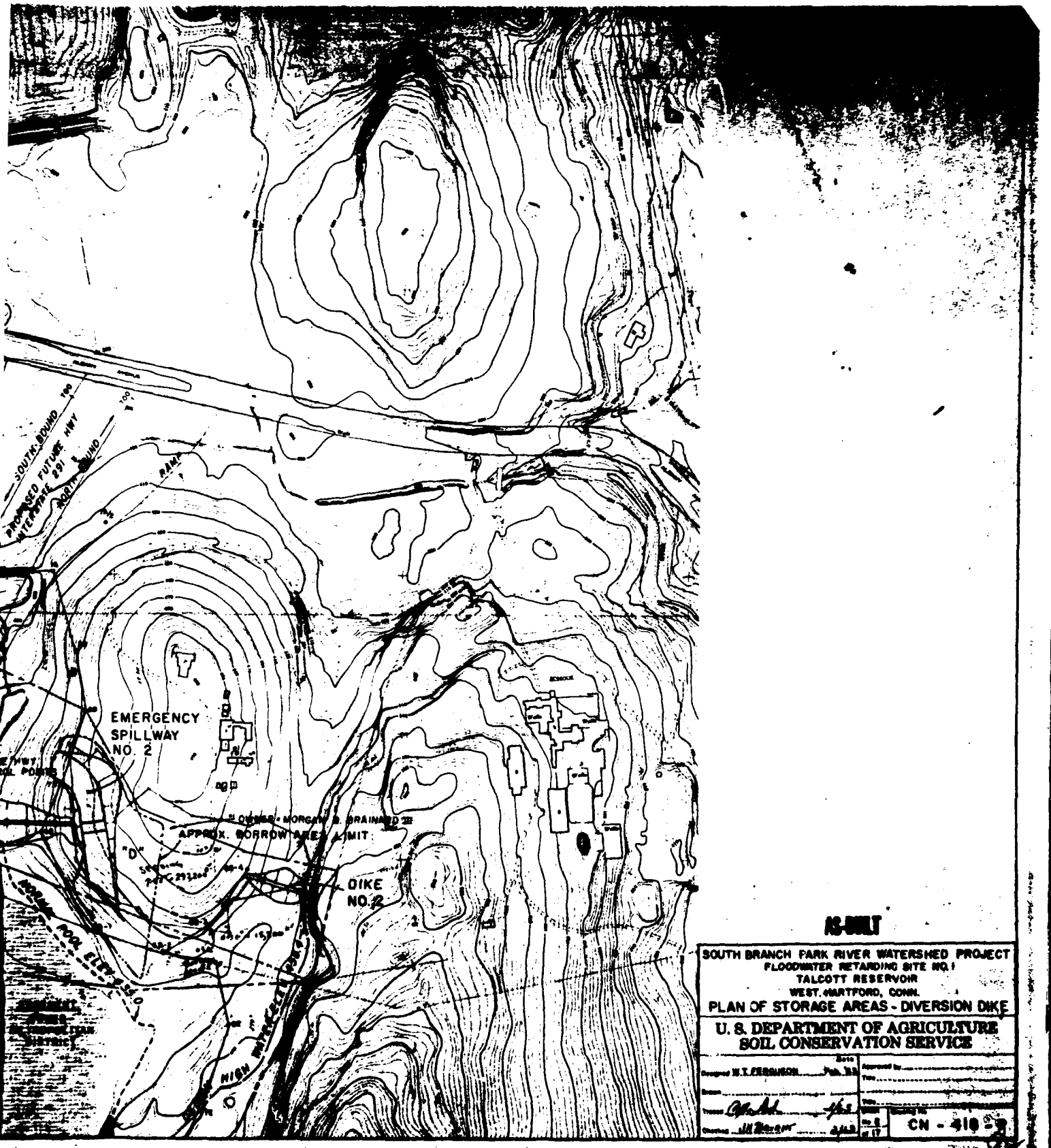
AREAS - DIVERSION DIKE
AREAS - MAIN DAM
N DIKE & CHANNEL
IKE NO 2
ON CHANNEL

ILS - DIVERSION DIKE

SPILLWAY - MAIN DAM

2


DIVERSION DIKE
DIVERSION CHANNEL
OWNER - METROPOLITAN DISTRICT
EMERGENCY SPILLWAY NO. 2
PROPOSED FUTURE INTERSTATE 291
SOUTH-BOUND
NORTH-BOUND
FUTURE HWY CONTROL POINT
"A" AUXILIARY
"B" PRINCIPAL SPILLWAY
NORMAL POOL ELEV. 1010
EMBANKMENT OWNER - METROPOLITAN DISTRICT



AS-BUILT

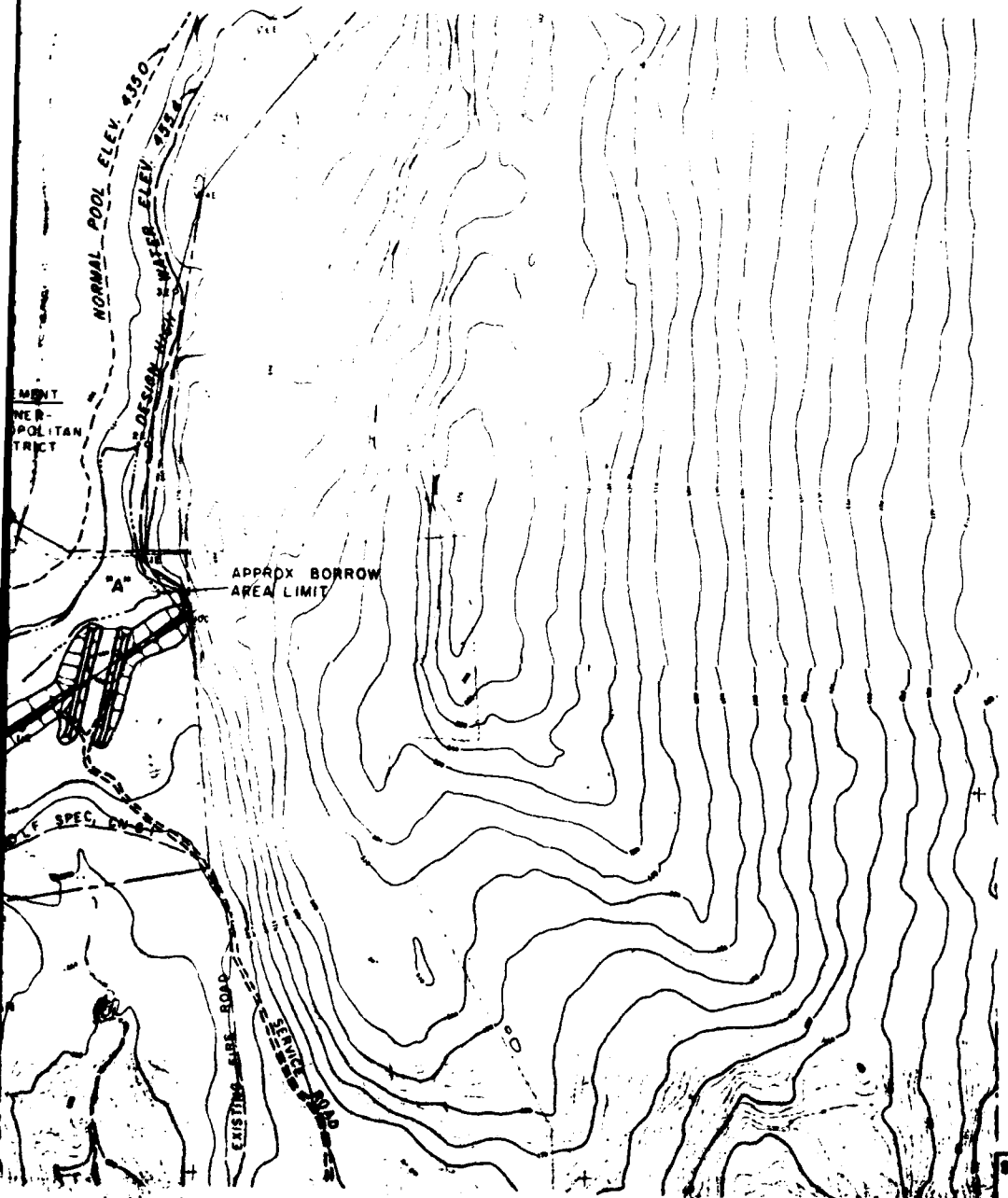
SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN.

PLAN OF STORAGE AREAS - DIVERSION DIKE

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed W.T. FERGUSON	Feb. '63	Approved by	
Drawn		Title	
Traced	4-63	Date	Drawing No.
Checked M.M. Brewer	4-63	No. 8 of 17	CN - 410 2

SOUTH BOUND
PROPOSED FUTURE INTERSTATE 291
NORTH BOUND
DESIGN HIGH WATER ELEV 4355
NORMAL POOL ELEV 4350
NORMAL POOL ELEV 4354
DESIGN HIGH WATER ELEV 4355.4
EASEMENT
OWNER-
METROPOLITAN
DISTRICT
LOW FLOW
BARRIER DIKE
PRINCIPAL
SPILLWAY
MAIN
DAM
"A"
"C"
APPROX BORROW
AREA LIMIT
APPROX BORR
AREA LIMIT
SERVICE ROAD
APPROX 1500' L.F. SPEC. CW
OWNER
METROPOLITAN
DISTRICT

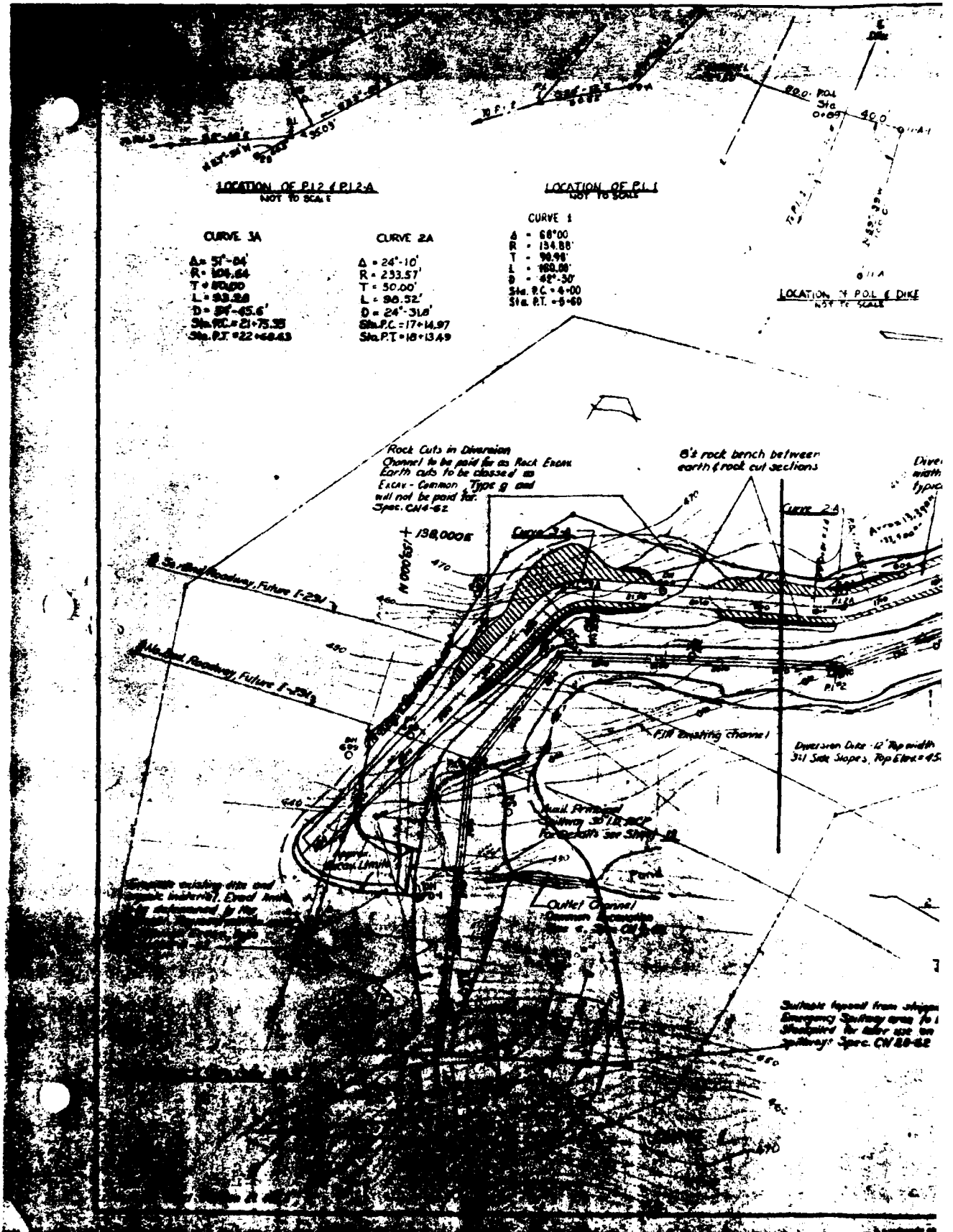


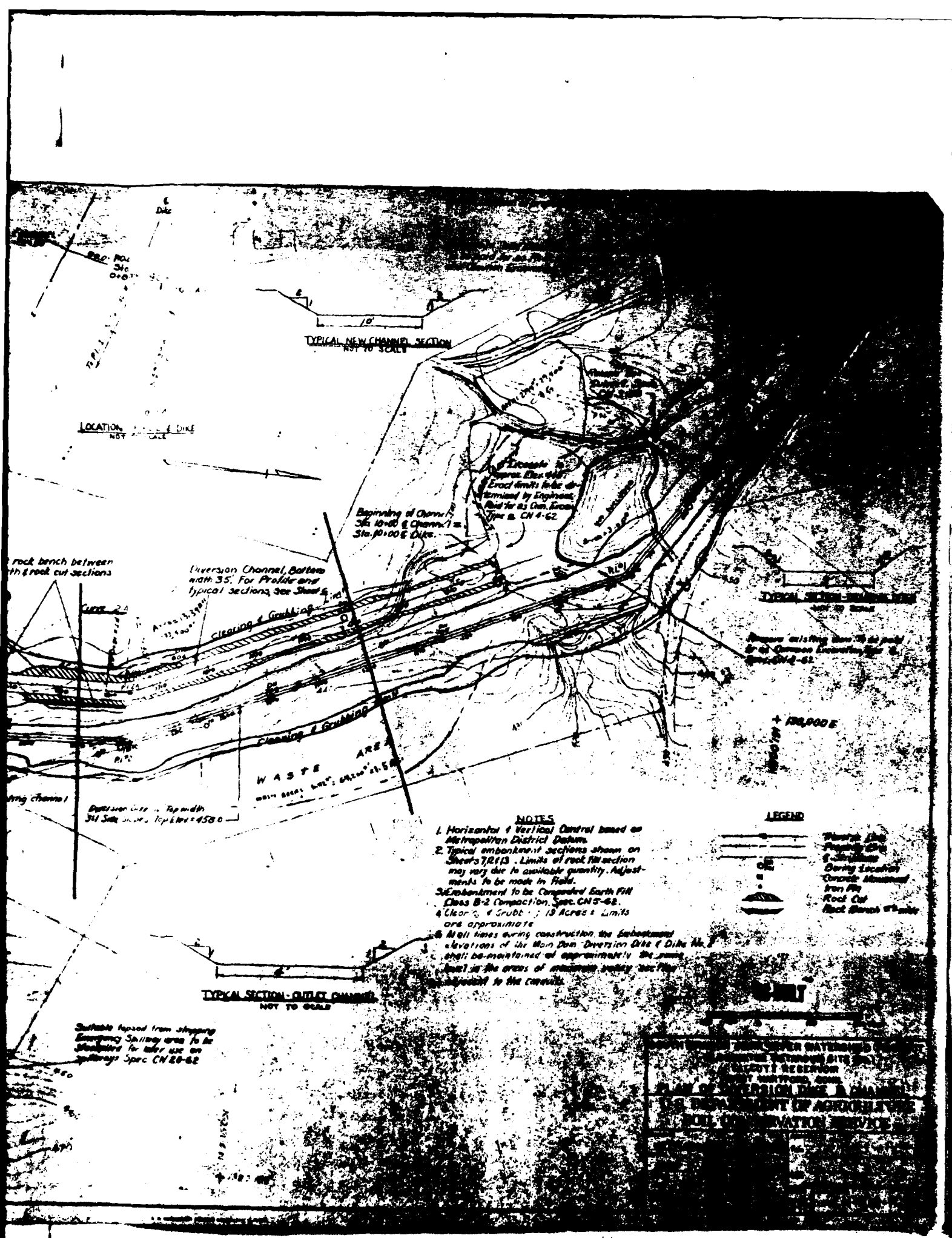
AS-BUILT

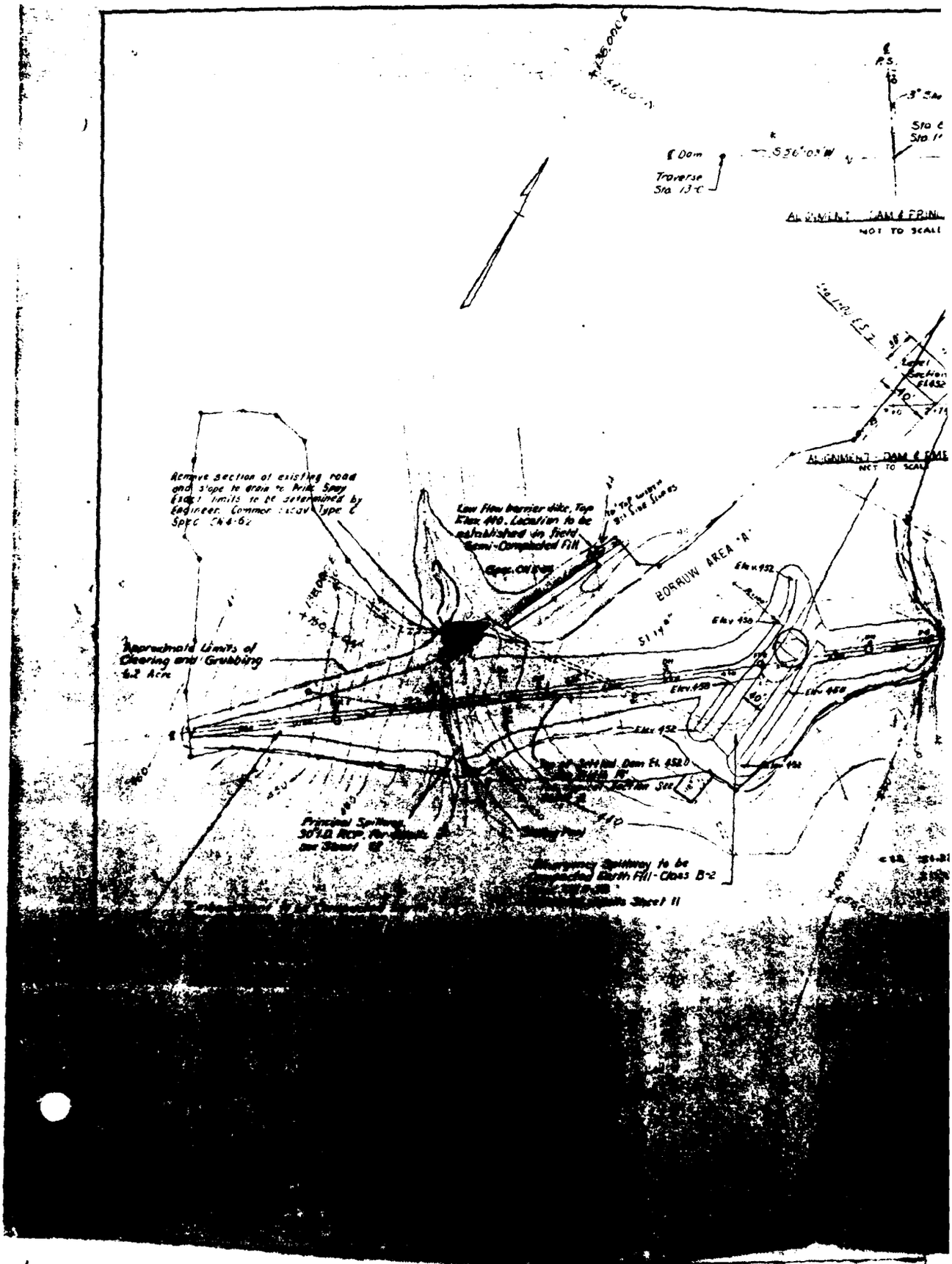
SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN.

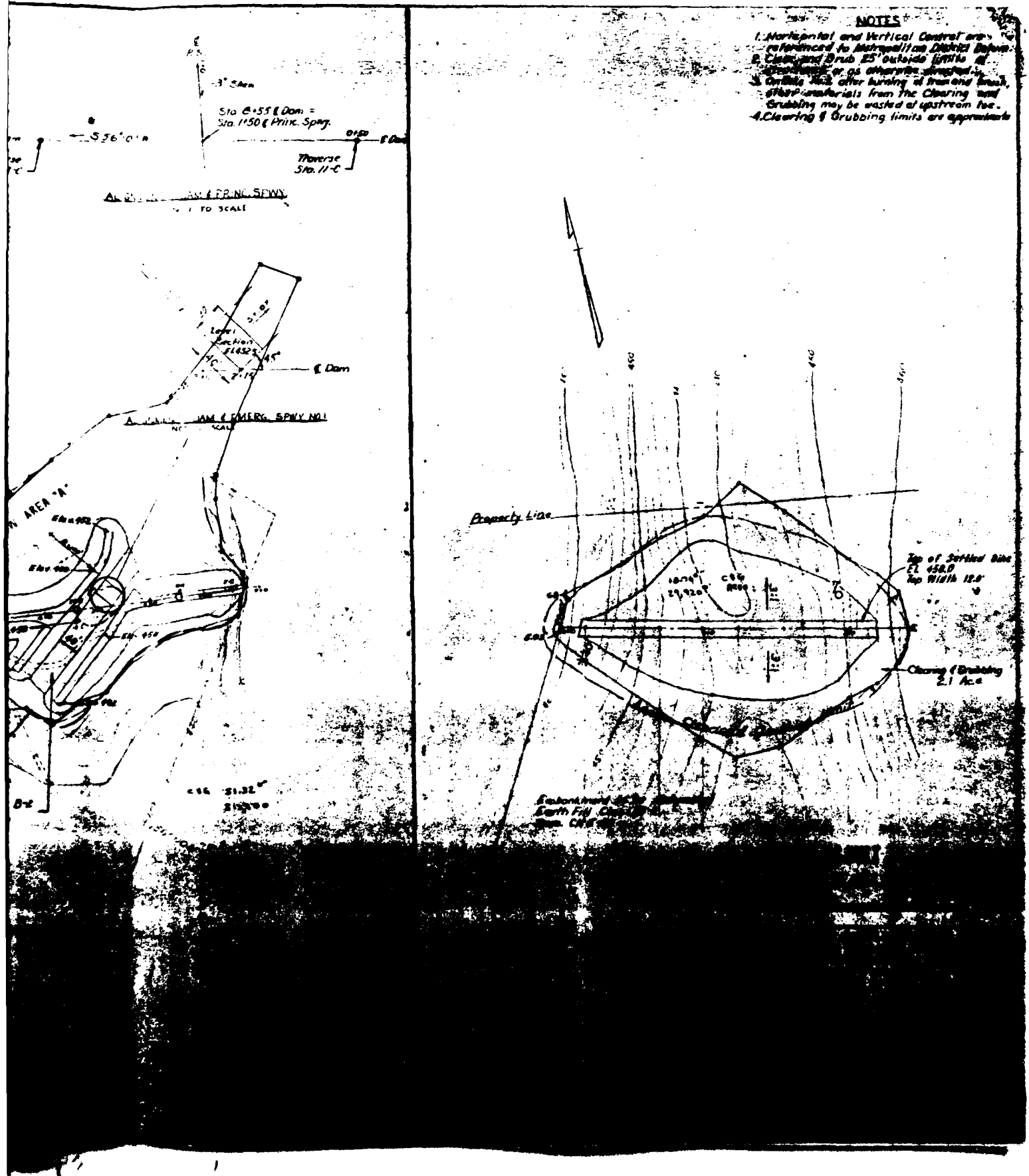
PLAN OF STORAGE AREAS - MAIN DAM

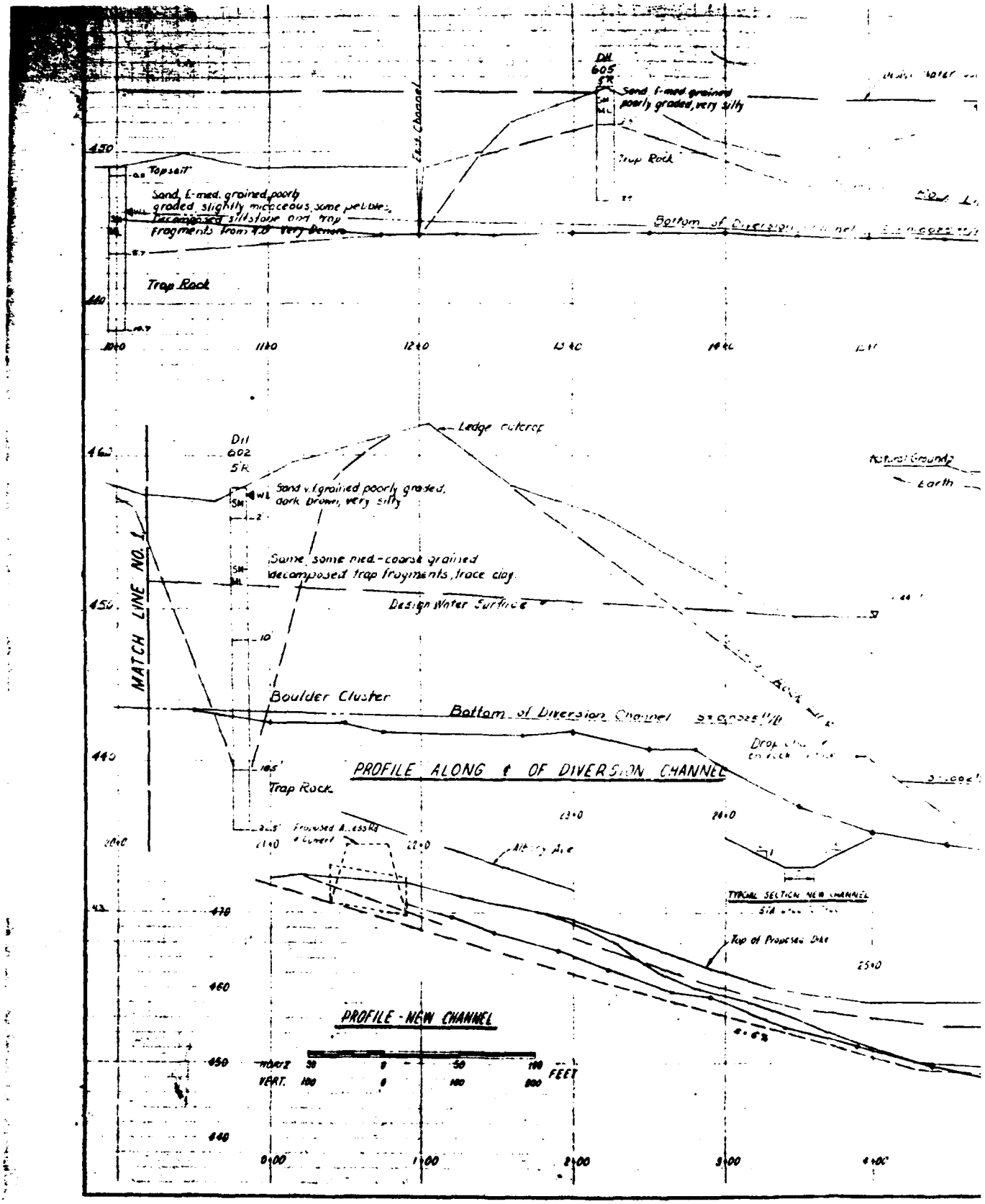
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

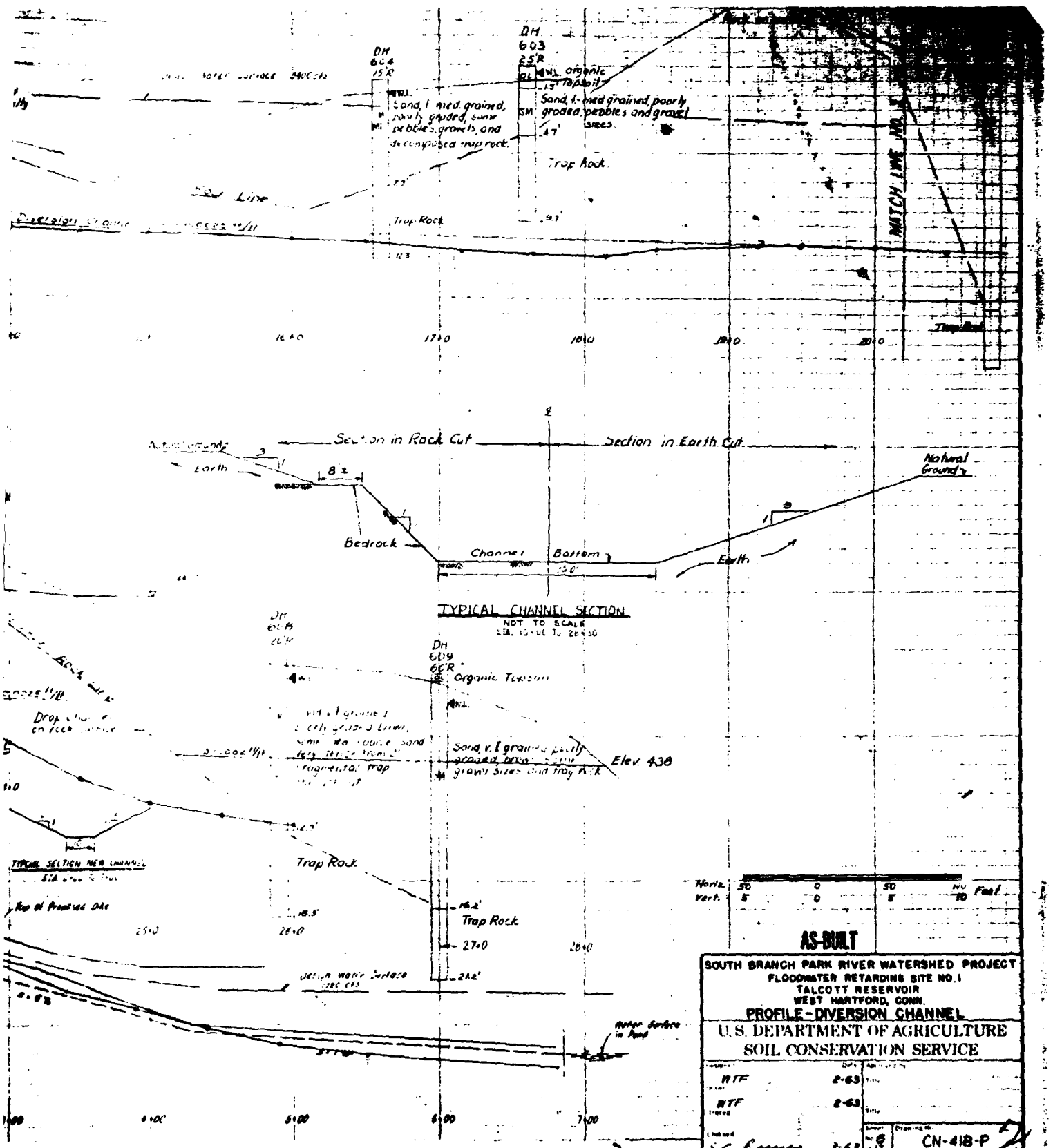

LOCATION OF P.I.2 & P.I.2-A
NOT TO SCALE
CURVE 3A
Δ = 51°-04'
R = 109.64
T = 57.00
L = 93.28
D = 52°-45.6'
Sta. P.C. = 21+75.35
Sta. P.T. = 22+68.63
CURVE 2A
Δ = 24°-10'
R = 233.57'
T = 50.00'
L = 98.52'
D = 24°-31.8'
Sta. P.C. = 17+14.97
Sta. P.T. = 18+13.49
LOCATION OF P.I.1
NOT TO SCALE
CURVE 1
Δ = 68°00'
R = 134.88'
T = 98.98'
L = 160.08'
D = 42°-30'
Sta. P.C. = 4+00
Sta. P.T. = 5+60
LOCATION OF P.O.I. & DIKE
NOT TO SCALE
Rock Cuts in Diversion Channel to be paid for as Rock Excav. Earth cuts to be classed as Excav - Common Type g and will not be paid for. Spec. CW4-62
6'± rock bench between earth & rock cut sections
Curve 2A
+138,000E
N 600'S
Curve 2-A
Str. Road Roadway, Future I-294
Mechanical Roadway, Future I-294
Fill Existing Channel
Diversion Dike - 12' Top width
3:1 Side Slopes, Top Elev. = 45
Future Access Limits
Pond
Outlet Channel
Surfaces topsoil from
Spec. CW 88-62


TYPICAL NEW CHANNEL SECTION
NOT TO SCALE
LOCATION
NOT TO SCALE
Beginning of Channel 1
Sta. 10+00 ℄ Channel 1 =
Sta. 10+00 ℄ Dike
Diversion Channel, Bottom width 35' For Profile and typical sections, see Sheet
Clearing & Grubbing
WASTE AREA
+ 100,000 E
TYPICAL SECTION - OUTLET CHANNEL
NOT TO SCALE
Suitable topsoil from stripping
Emergency Spillway area to be
stockpiled for later use on
spillways. Spec. CN 20-62
NOTES
1. Horizontal & Vertical Control based on Metropolitan District Datum.
2. Typical embankment sections shown on Sheet 3, 12 & 13. Limits of rock fill section may vary due to available quantity. Adjustments to be made in Field.
3. Embankment to be Compacted Earth Fill Class B-2 Compaction. Spec. CN 5-62.
4. Clearing & Grubbing - 13 Acres ± Limits are approximate
5. At all times during construction the Embankment elevations of the Main Dam, Diversion Dike & Dike No. 1 shall be maintained at approximately the same level as the areas of maximum outlay section adjacent to the conduit.
LEGEND
Property Line
Property Line
℄ Structure
Boring Location
Concrete Monument
Iron Pin
Rock Cut
Rock Bench at 1 on 1 slope
SHEET
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

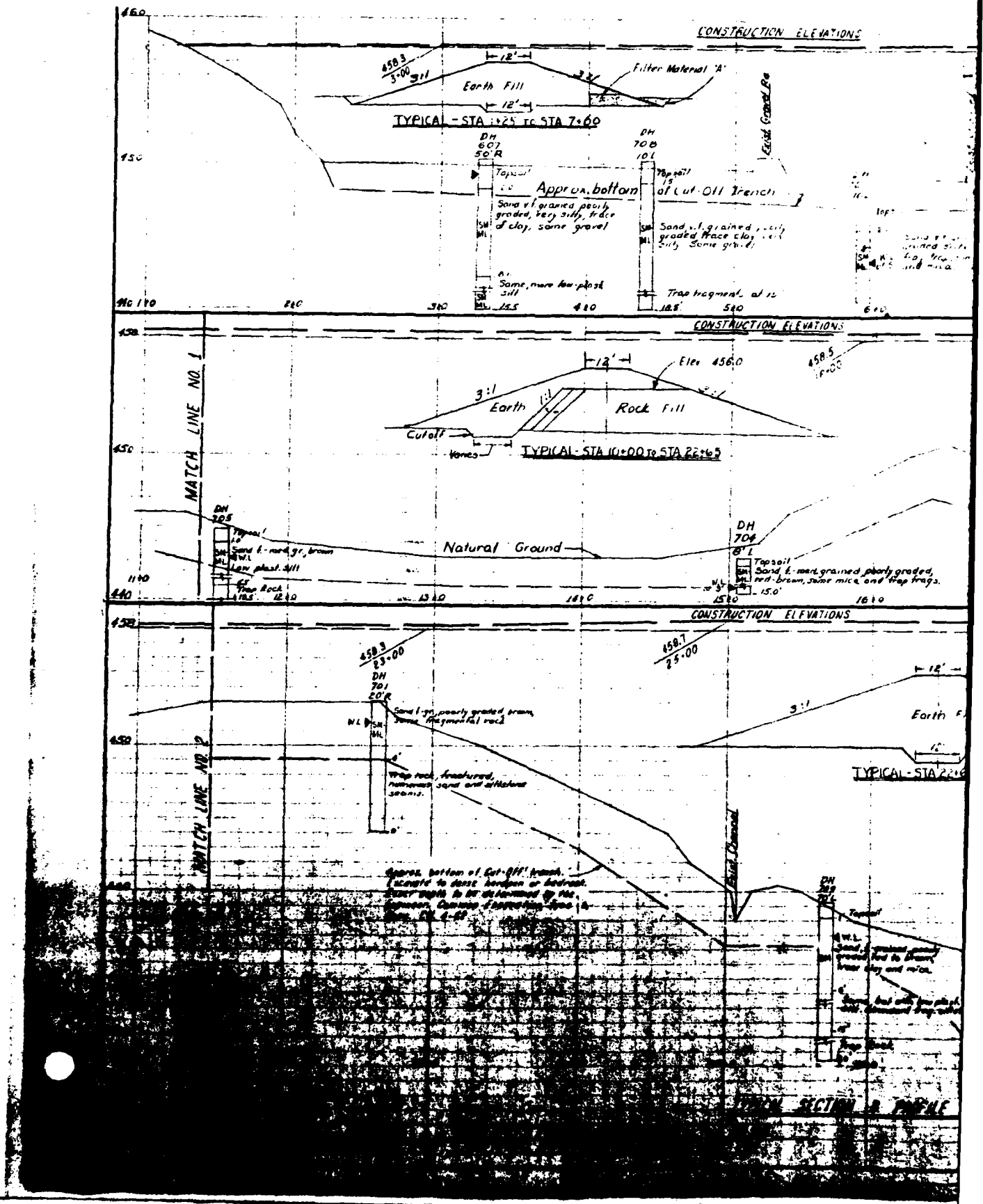

Remove section of existing road and slope to drain to Pride Spwy
Exact limits to be determined by Engineer. Common Excav Type C Spec CN 6-62
Low Flow barrier dike, Top Elev 440. Location to be established in field Semi-Compacted Fill
BORROW AREA "A"
Approximate Limits of Clearing and Grubbing 6.2 Acre
Principal Spillway
Auxiliary Spillway to be
Traverse Sta 13+
ALIGNMENT - DAM & P.R.W.
NOT TO SCALE

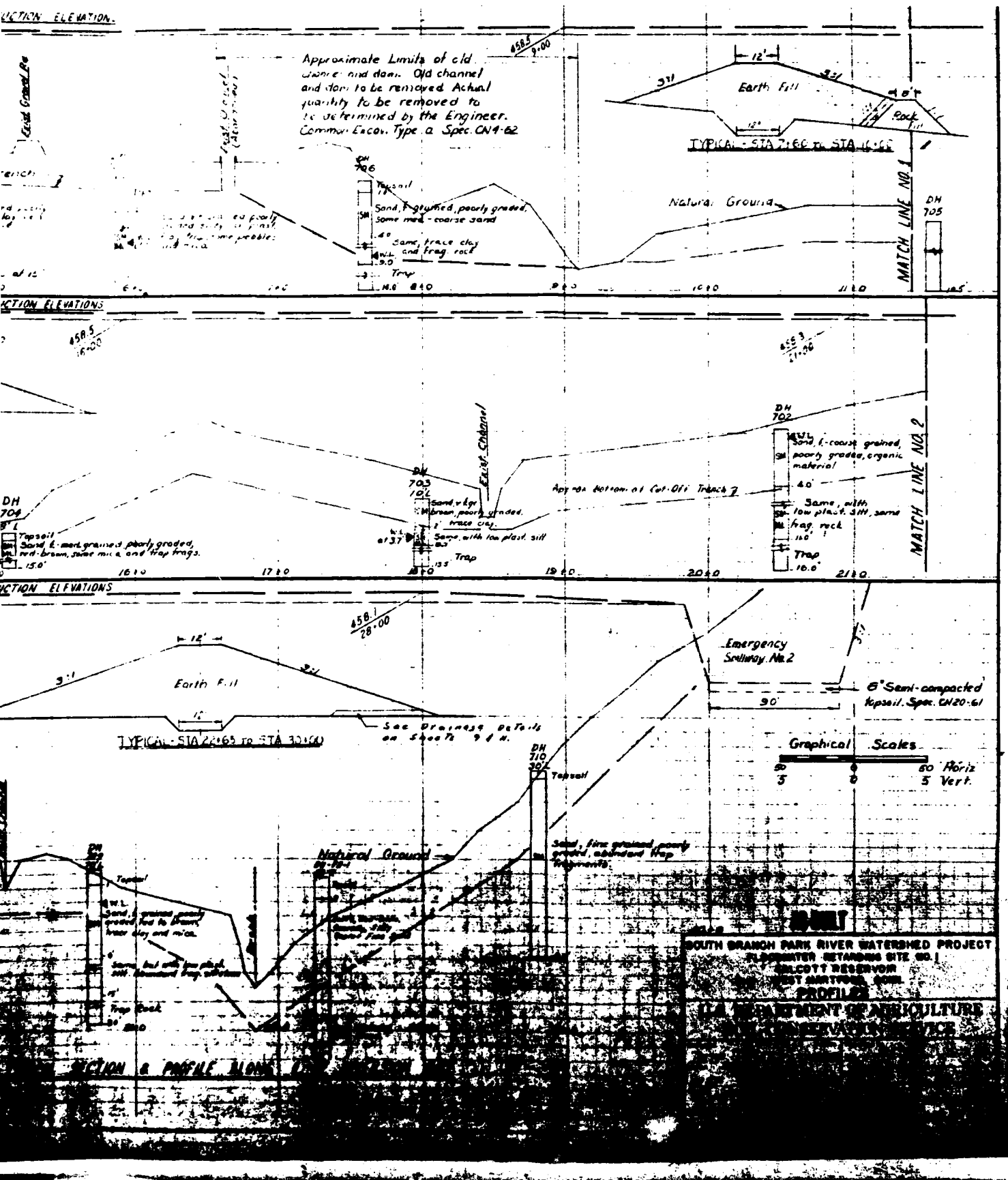

NOTES
1. Horizontal and Vertical Control are referenced to Metropolitan District Datum.
2. Clear and Grub 25' outside limits of excavation or as otherwise directed.
3. Dispose of all other burning of trees and brush, other materials from the Clearing and Grubbing may be wasted at upstream toe.
4. Clearing & Grubbing limits are approximate
Sta 6+55 ℄ Dam = Sta. 1150 ℄ Prim. Spwy.
Traverse Sta. 11+℄
℄ Dam
Property Line
Top of Settled Dike El. 458.0 Top Width 12.0
Clearing & Grubbing 2.1 Ac.
AREA "A"

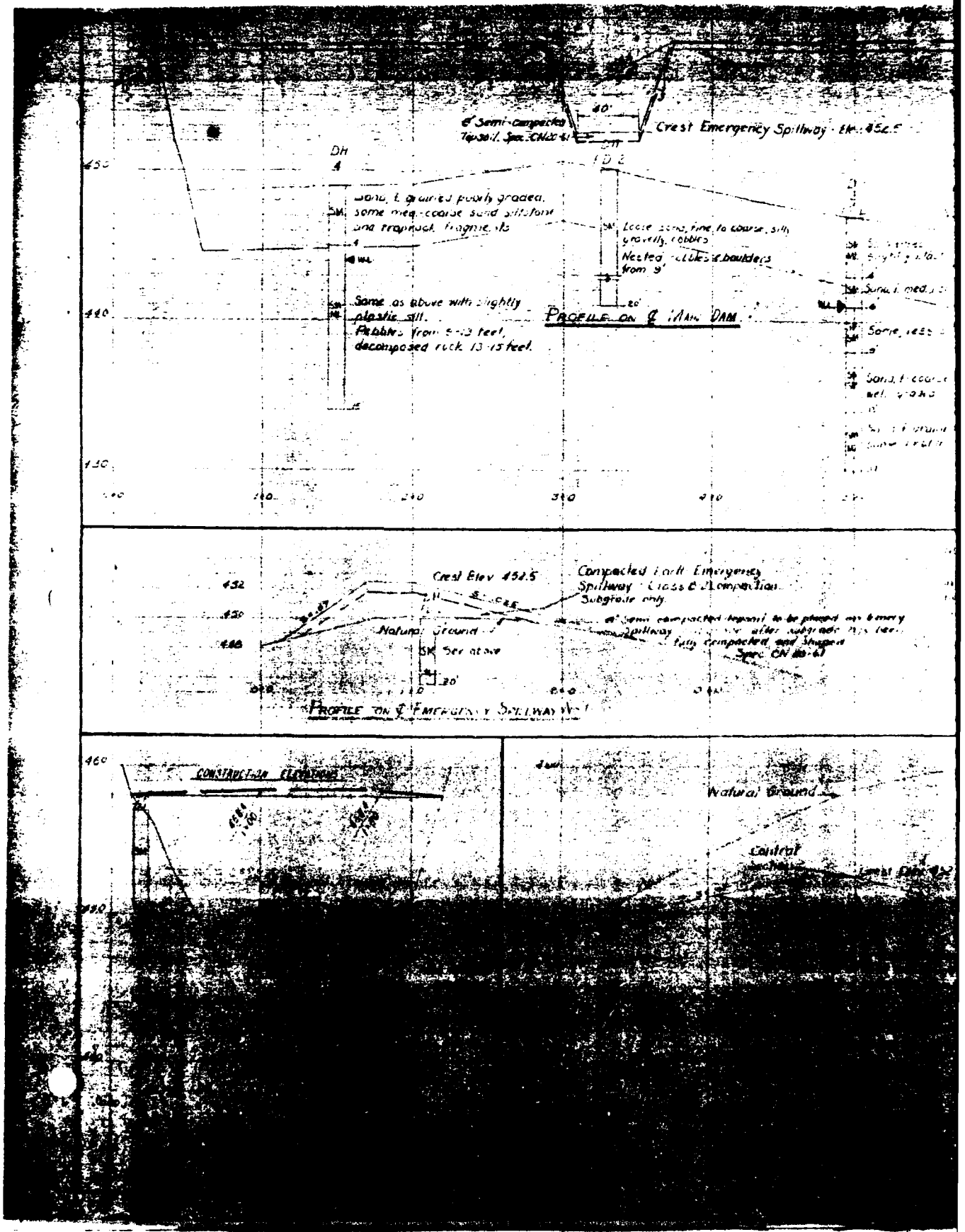

Dil 605 S'R
Sand f-med grained poorly graded, very silty
East Channel
Topsoil
Sand, f-med. grained, poorly graded, slightly micaceous, some pebbles, decomposed siltstone and trap fragments from 4'0 very dense
Trap Rock
Bottom of Diversion Channel
Dil 602 S'R
Ledge outcrop
Natural Ground
Earth
Sand v.f grained poorly graded, dark brown, very silty
Some, some med.-coarse grained decomposed trap fragments, trace clay
Design Water Surface
MATCH LINE NO. 1
Boulder Cluster
Bottom of Diversion Channel
PROFILE ALONG ℄ OF DIVERSION CHANNEL
Trap Rock
Proposed Access Rd & Culvert
Albany Ave
TYPICAL SECTION NEW CHANNEL
Top of Proposed Dike
PROFILE - NEW CHANNEL
HORIZ 50 0 50 100 FEET
VERT. 100 0 100 200
0+00
1+00
2+00
3+00
4+00

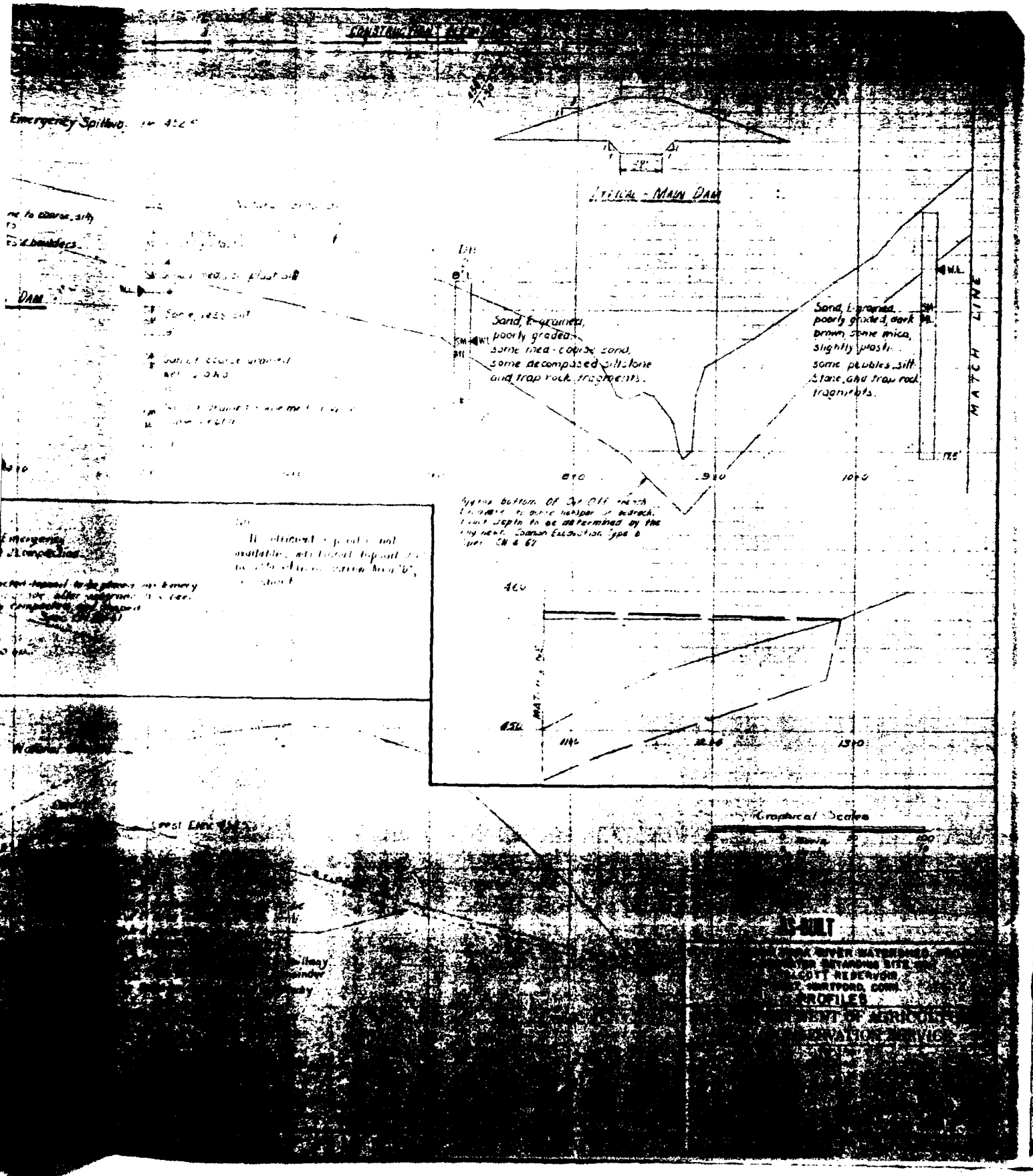


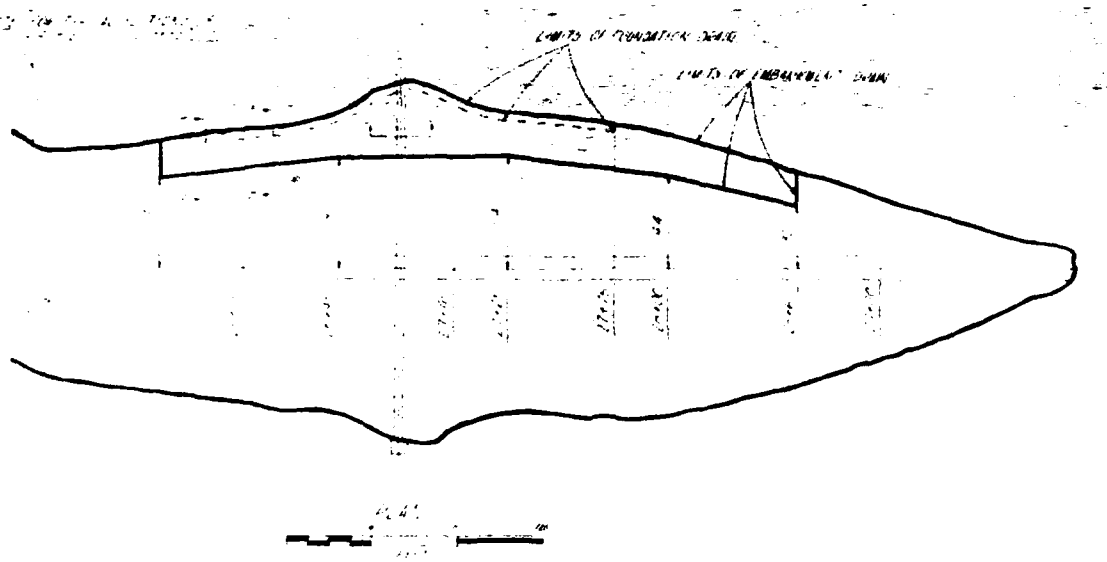
Form SCS-316 (November 1956)

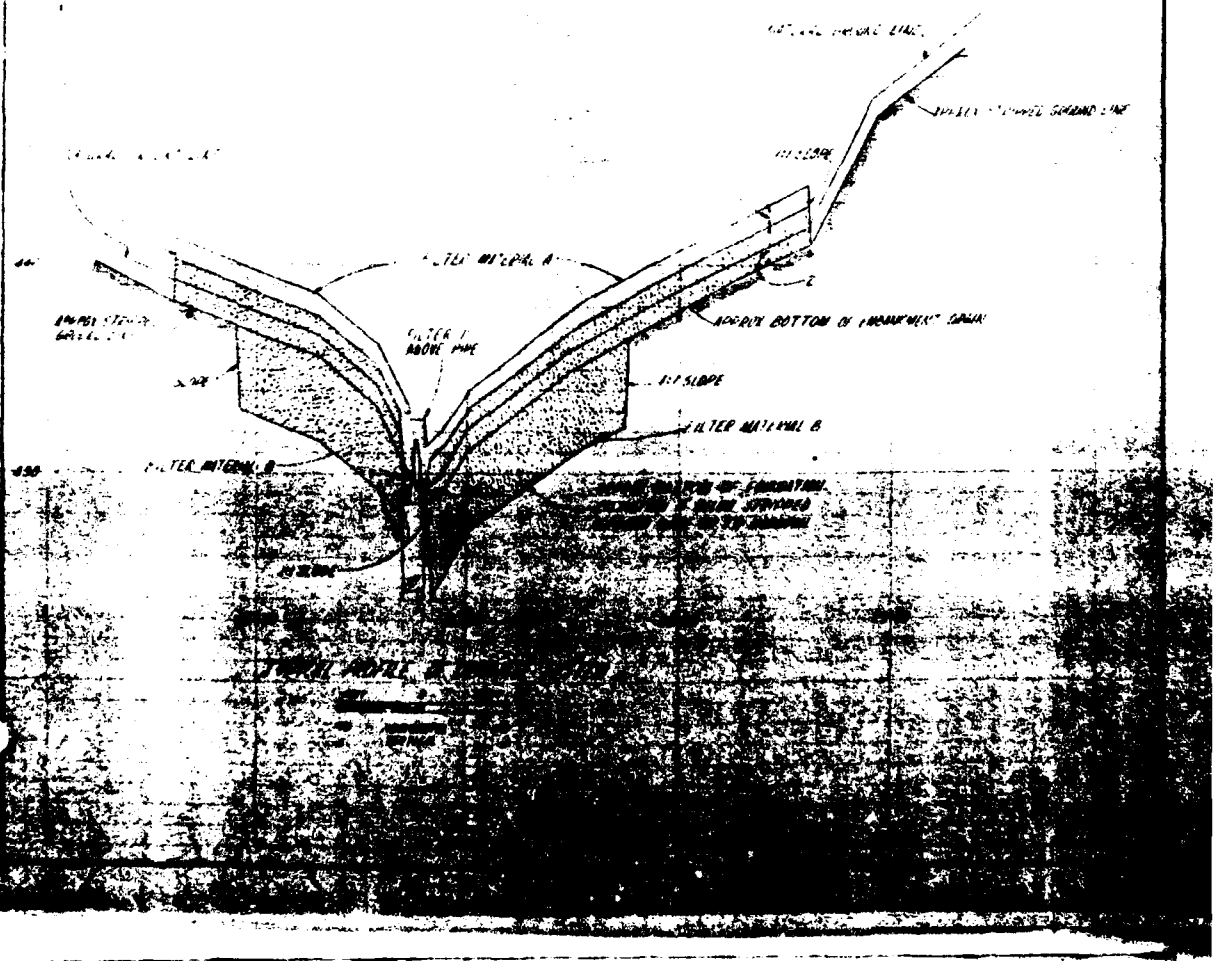

CONSTRUCTION ELEVATIONS
Earth Fill
Filter Material 'A'
TYPICAL - STA 1+25 TO STA 7+60
Approx. bottom of Cut-Off Trench
Sand v.f. grained, poorly graded, very silty, trace of clay, some gravel
Sand v.f. grained, poorly graded trace clay, very silty, some gravel
Trap fragment. of rock
Topsoil
Cutoff
Key
TYPICAL - STA 10+00 TO STA 22+65
Rock Fill
Natural Ground
MATCH LINE NO. 1
MATCH LINE NO. 2
Sand f.-med. gr., brown
Low plast. silt
Trap rock
Sand f.-med. grained, poorly graded, red-brown, some mica and trap frags.
Trap rock, fractured, numerous sand and siltstone seams.
Approx. bottom of Cut-Off trench. Excavate to dense bedrock or bedrock. Exact depth to be determined by the Engineer. Contract 4-68
Earth Channel
TYPICAL SECTION OF CUTOFF

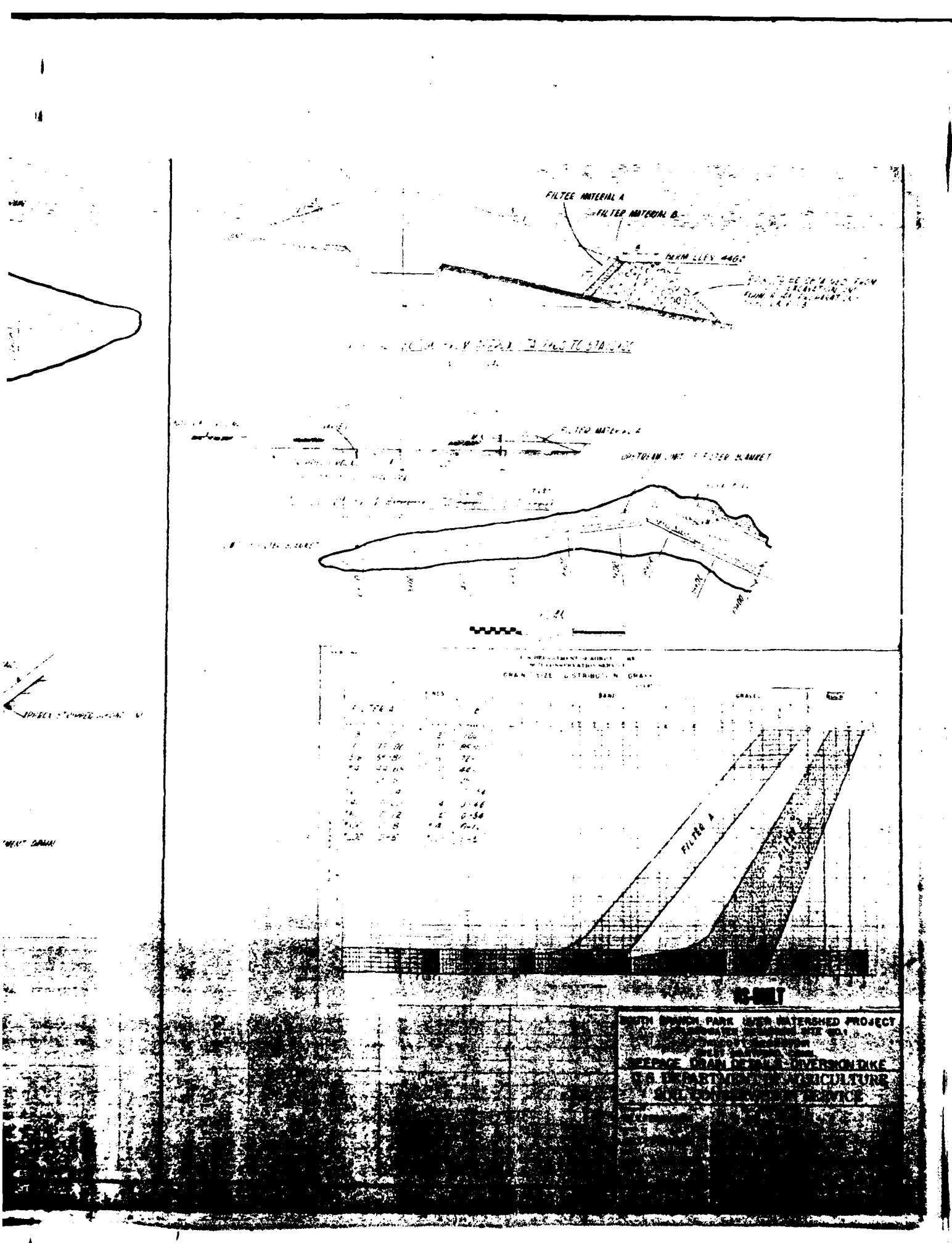

UCTION ELEVATION.
Approximate Limits of old channel and dam to be removed. Actual quantity to be removed to be determined by the Engineer. Common Excav. Type a Spec. CN4-62
East Channel
458.5
9.00
12'
3:1
Earth Fill
8'
Rock Fill
TYPICAL - STA 7+60 TO STA 16+65
DH 706
Topsoil
Sand, fine grained, poorly graded, some med. - coarse sand
Same, trace clay and frag. rock
Trap
Natural Ground
DH 705
MATCH LINE NO. 1
UCTION ELEVATIONS
458.5
16.00
458.5
21.00
DH 704
Topsoil
Sand, fine grained, poorly graded, red-brown, some mica and trap frags.
DH 703
Sand, v. fine grained, poorly graded, brown, trace clay
Same, with low plast. silt
Trap
East Channel
Approx. Bottom of Cut-Off Trench
DH 702
Sand, fine-coarse grained, poorly graded, organic material
Same, with low plast. silt, some frag. rock
Trap
MATCH LINE NO. 2
UCTION ELEVATIONS
458.1
28.00
12'
3:1
Earth Fill
See Drainage Details on Sheets 9 of N.
TYPICAL - STA 22+65 TO STA 30+00
Emergency Spillway No. 2
6" Semi-compacted topsoil. Spec. CN20-61
90'
Graphical Scales
50 0 50 Horiz
5 0 5 Vert.
DH 710
Topsoil
Natural Ground
Sand, fine grained, poorly graded, cobbles and frag. fragments
Trap Rock
SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
MALCOTT RESERVOIR
WEST HARTFORD, CONN.
PROFILES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SECTION & PROFILE ALONG

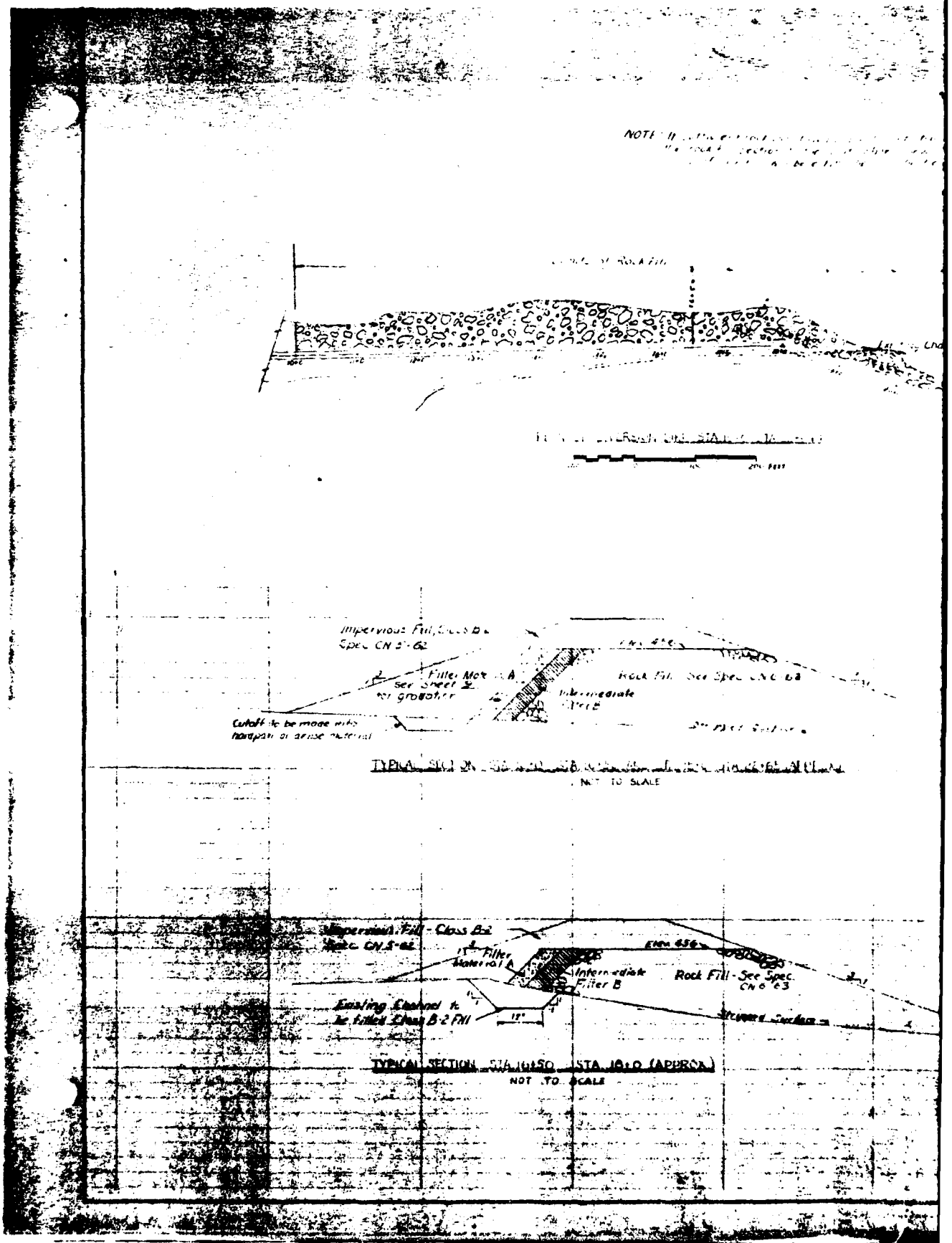

6' Semi-compacted
Topsoil. Spec. CNDC 61
40'
Crest Emergency Spillway - El. 452.5
DH
4
TD 2
Sand, gravel, poorly graded,
some med.-coarse sand, silt, fine
and fragmental fragments
Loose sand, fine to coarse, silty
gravelly, cobbles
Nested cobbles & boulders
from 9'
Some as above with slightly
plastic silt.
Pebbles from 8-13 feet,
decomposed rock 13-15 feet.
PROFILE ON ℄ MAIN DAM
Crest Elev 452.5
Compacted Earth Emergency
Spillway - Class C Compaction
Subgrade only
Natural Ground
See above
30'
PROFILE ON ℄ EMERGENCY SPILLWAY
CONSTRUCTION CLEARING
Natural Ground
Control
Crest Elev 452

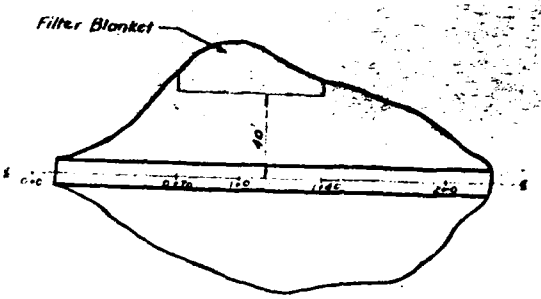

Emergency Spillway
TYPICAL - MAIN DAM
Sand, fine grained, poorly graded, some fine - coarse sand, some decomposed siltstone and trap rock fragments.
Sand, fine grained, poorly graded, dark brown, some mica, slightly moist, some pebbles, silt stone, and trap rock fragments.
MATCH LINE
W.L.
Graphical Scales
AS-BUILT
PROFILES



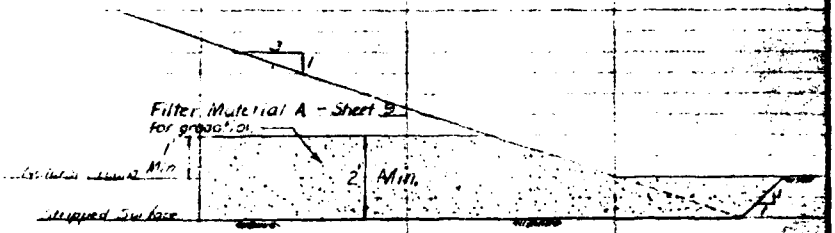



FILTER MATERIAL A
FILTER MATERIAL B
FILTER A
SOUTH BRANCH PARK RIVER WATERSHED PROJECT
DIVERSION DIKE
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE


Impervious Fill, Class B-2
Spec. CN 5-62
Filter Material A
See Sheet
for gradation
Intermediate
Filter B
Rock Fill - See Spec.
CN 0-63
Cutoff to be made with
impervious material
NOT TO SCALE
Impervious Fill - Class B-2
Spec. CN 5-62
Filter
Material A
Elev. 656
Intermediate
Filter B
Rock Fill - See Spec.
CN 0-63
Existing Channel to
be filled Class B-2 Fill
15'
NOT TO SCALE



PLAN OF DIKE NO. 2



TYPICAL SECTION OF DIKE NO. 2 FILTER BLANKET
NOT TO SCALE

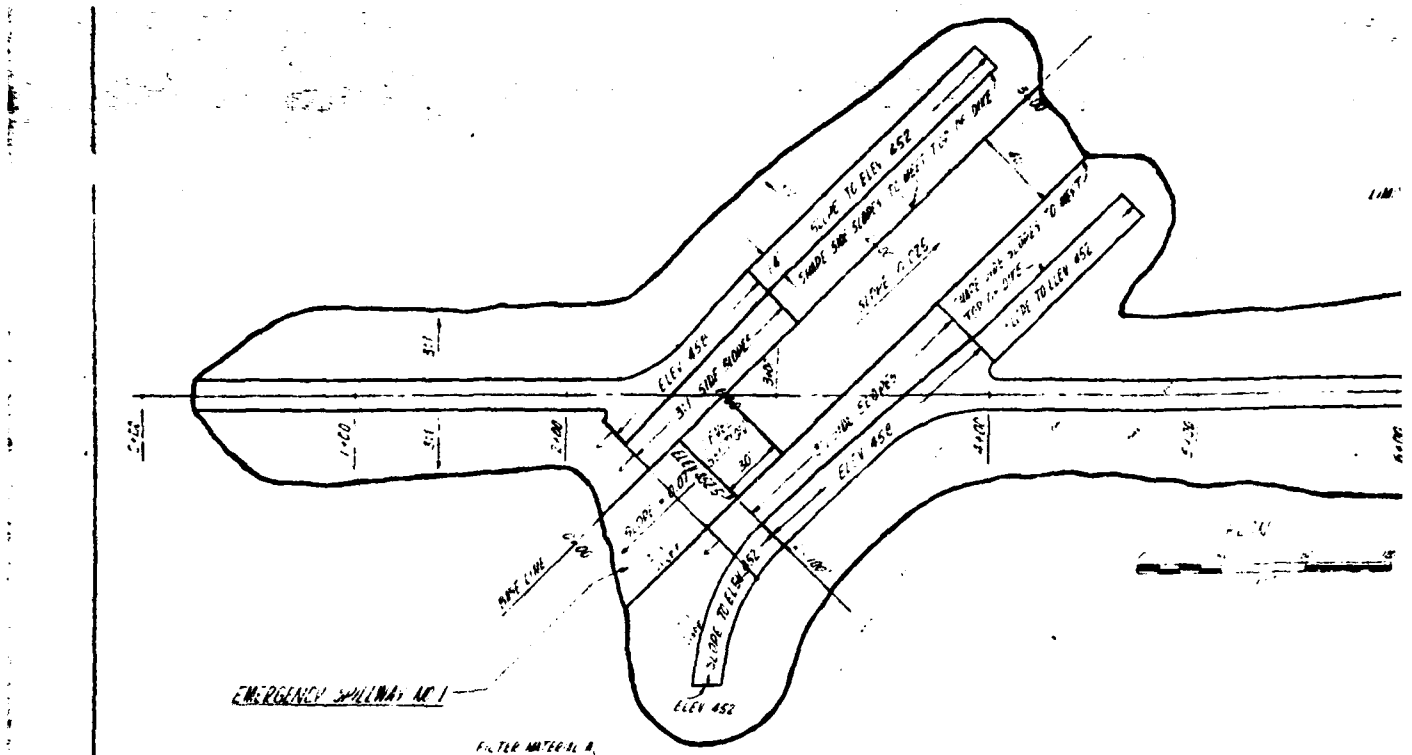
Fill - See Spec. CN 6 63

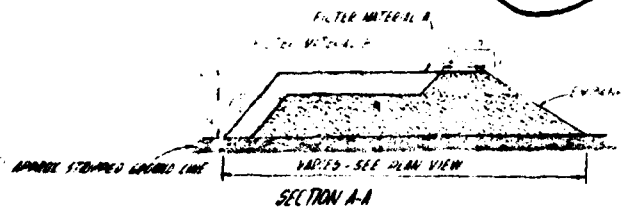
AS-BUILT

SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN.

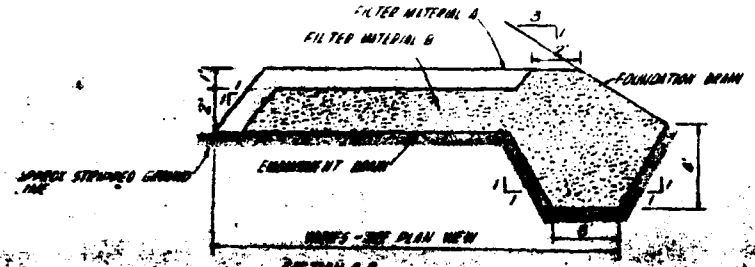
SEEPAGE DRAIN DETAILS-DIKES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

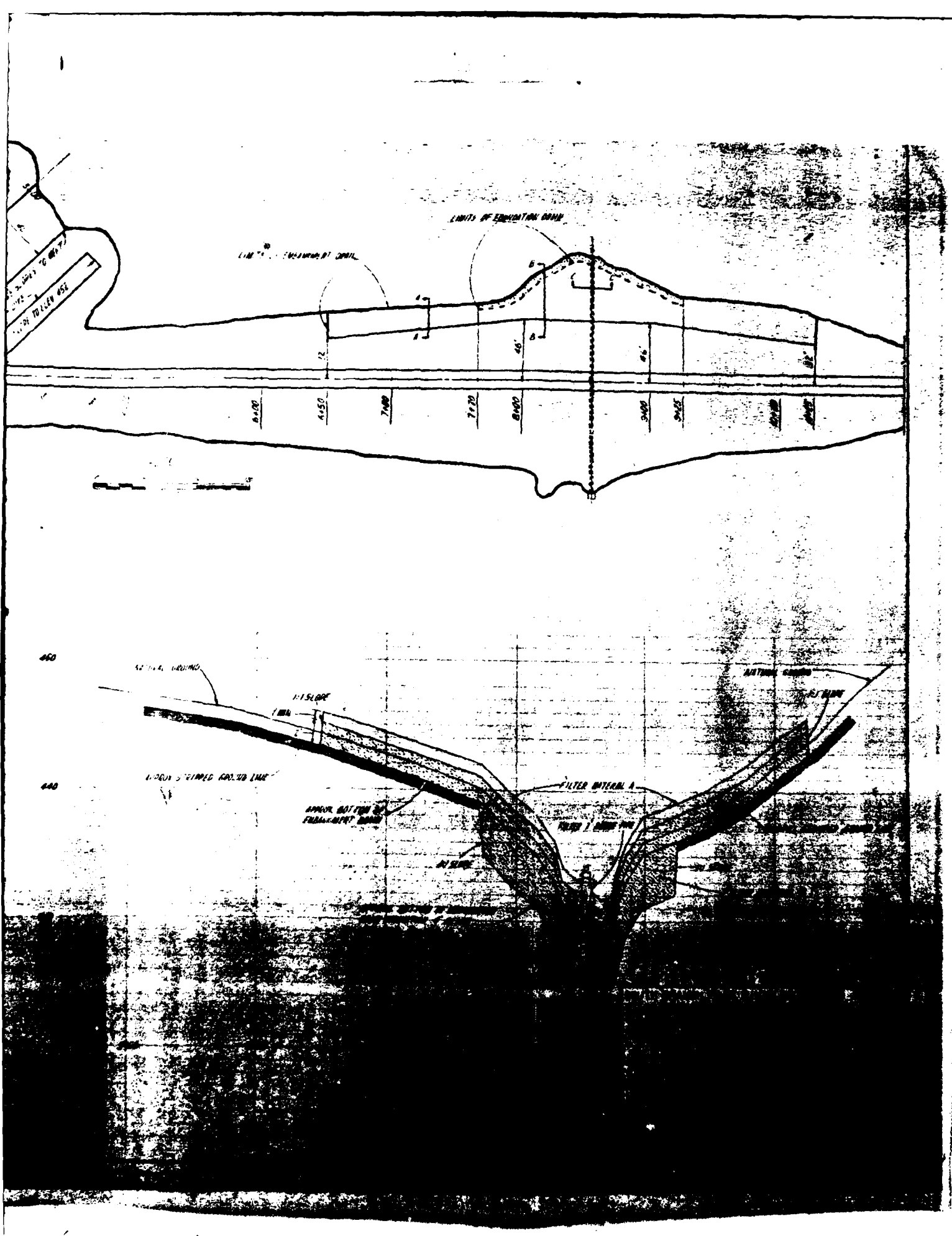


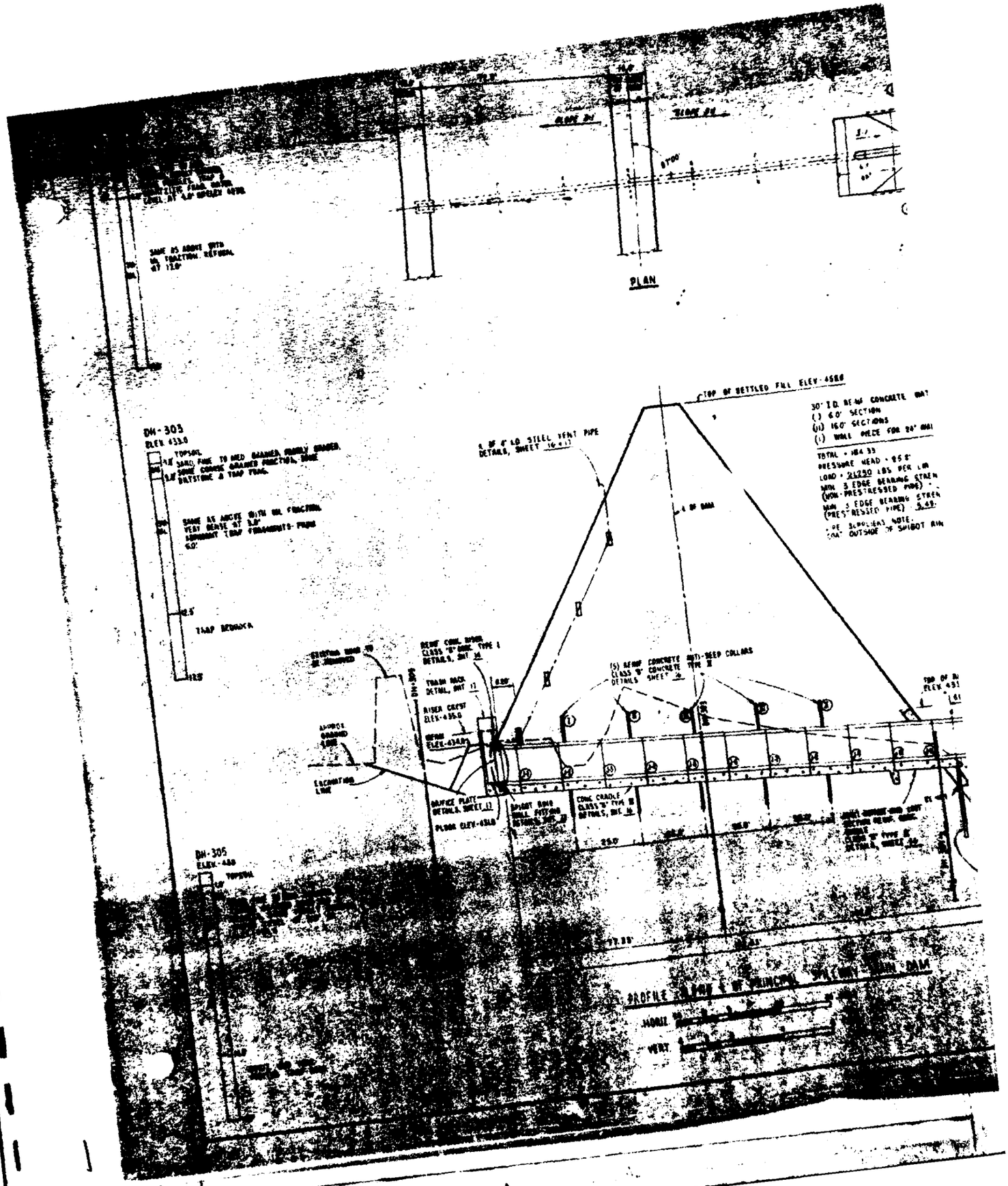


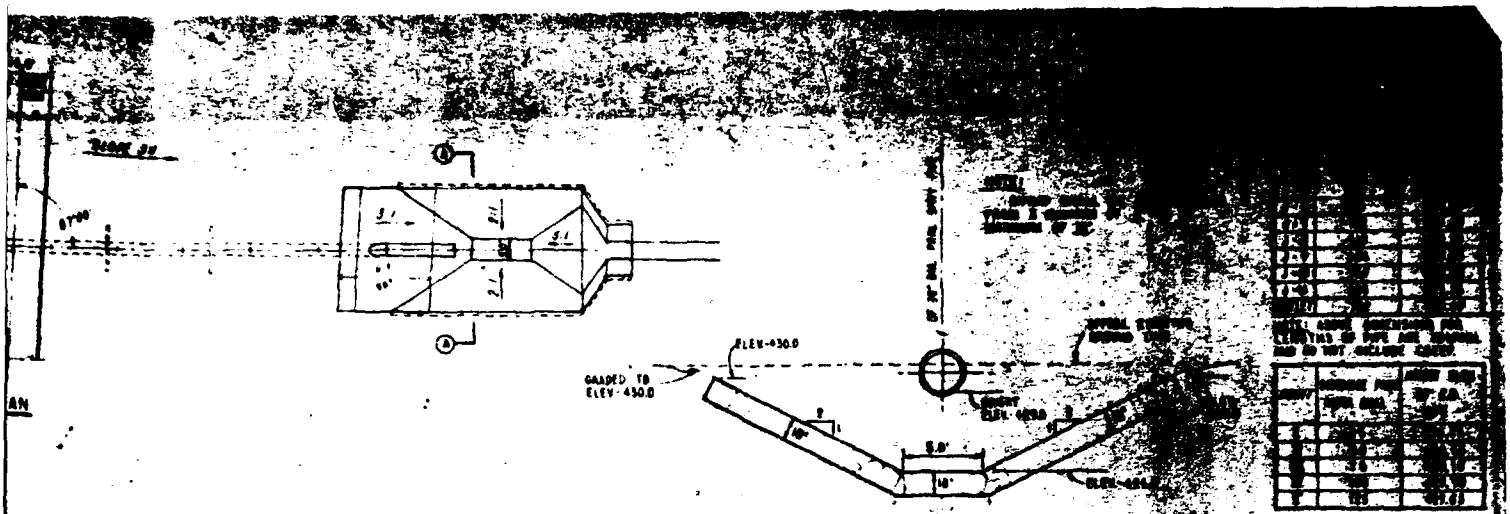
SECTION A-A



SECTION B-B


LIMITS OF EXCAVATION DRAW
6+00
6+50
7+00
7+70
8+00
9+00
9+25
10+00
10+27
460
440
1:1 SLOPE
FILTER MATERIAL A


PLAN
DH-303
ELEV 433.0
TOPSOIL
TRAP ROCK
DH-305
ELEV-438
TOPSOIL
TOP OF SETTLED FILL ELEV-458.0
30" I.D. REINF CONCRETE OUT
(i) 60' SECTION
(ii) 16.0' SECTIONS
(i) WALL PIECE FOR 24" DIA
TOTAL = 184.33
PRESSURE HEAD = 95.8'
LOAD = 21750 LBS PER LIN
MIN 3 EDGE BEARING STREN
(NON-PRESTRESSED PIPE) =
MIN 3 EDGE BEARING STREN
(PRESTRESSED PIPE) 5.43
OUTSIDE OF SPIGOT RIN
(5) REINF CONCRETE ANTI-SEEP COLLARS
CONC CRADLE
CLASS "B" TYPE II
EXCAVATING LINE
PROFILE ALONG ℄ OF PRINCIPAL SPILLWAY DAM

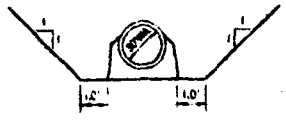


TOP OF SETTLED FILL ELEV. 458.0

30" I.D. REINF. CONCRETE WATER PIPE
(i) 60' SECTION
(ii) 160' SECTIONS
(iii) WALL PIECE FOR 24" WALL

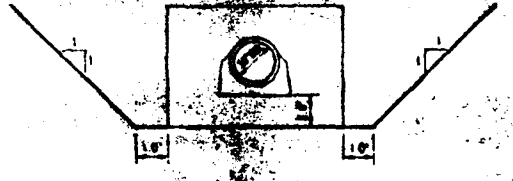
TOTAL = 184.55
PRESSURE HEAD = 85.2'
LOAD = 21,250 LBS. PER LIN. FT. BASED O.D. OF 35.5"
MIN. 3 EDGE BEARING STRENGTH FOR 0.01" CRACK (NON-PRESTRESSED PIPE) = 303 LBS. PER LIN. FT.
MIN. 3 EDGE BEARING STRENGTH FOR 0.001" CRACK (PRESTRESSED PIPE) 5,49: LBS. PER LIN. FT.

...PE SUPPLIER'S NOTE:
...OUTSIDE OF SHIBOT RING ON ONE 16' SECTION.

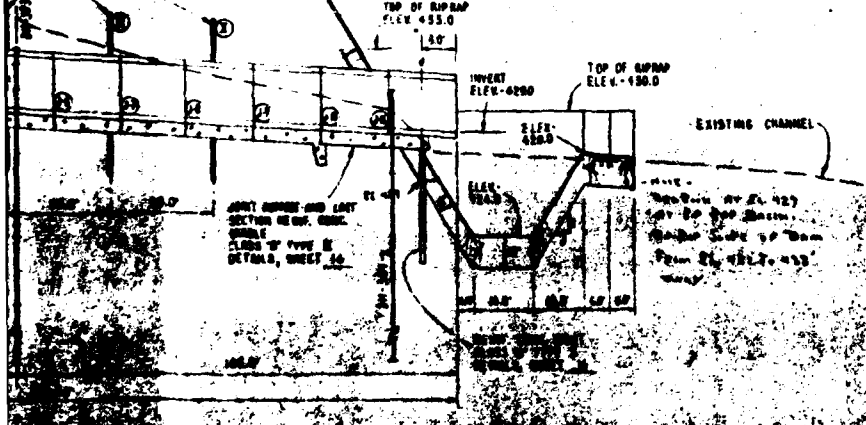


TYPICAL EXCAVATION SECTION FOR CRADLE AND RISER

TYPICAL SECTION OF OUTLET CHANNEL



TYPICAL EXCAVATION SECTION FOR ANTI-SEEP COLLARS

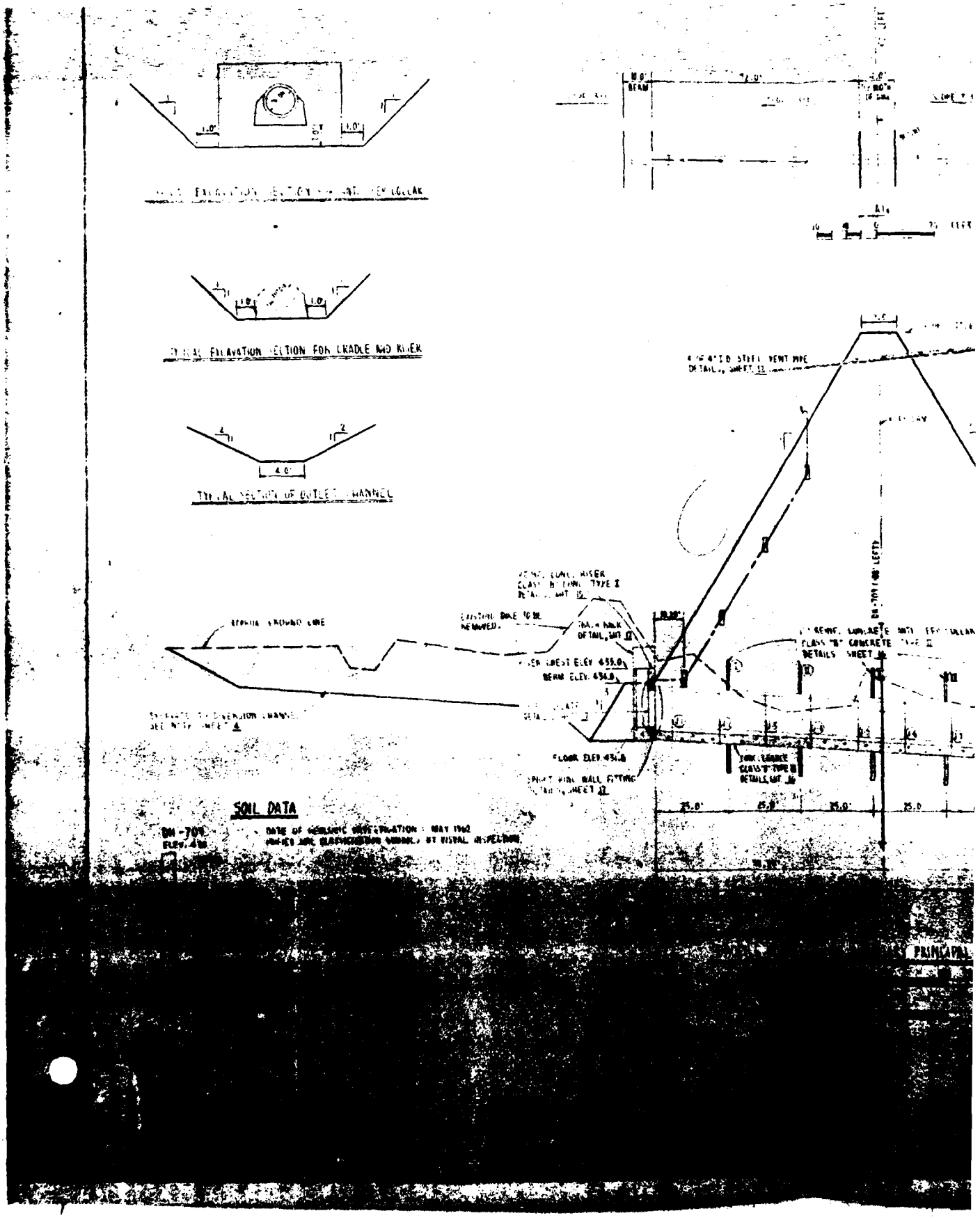


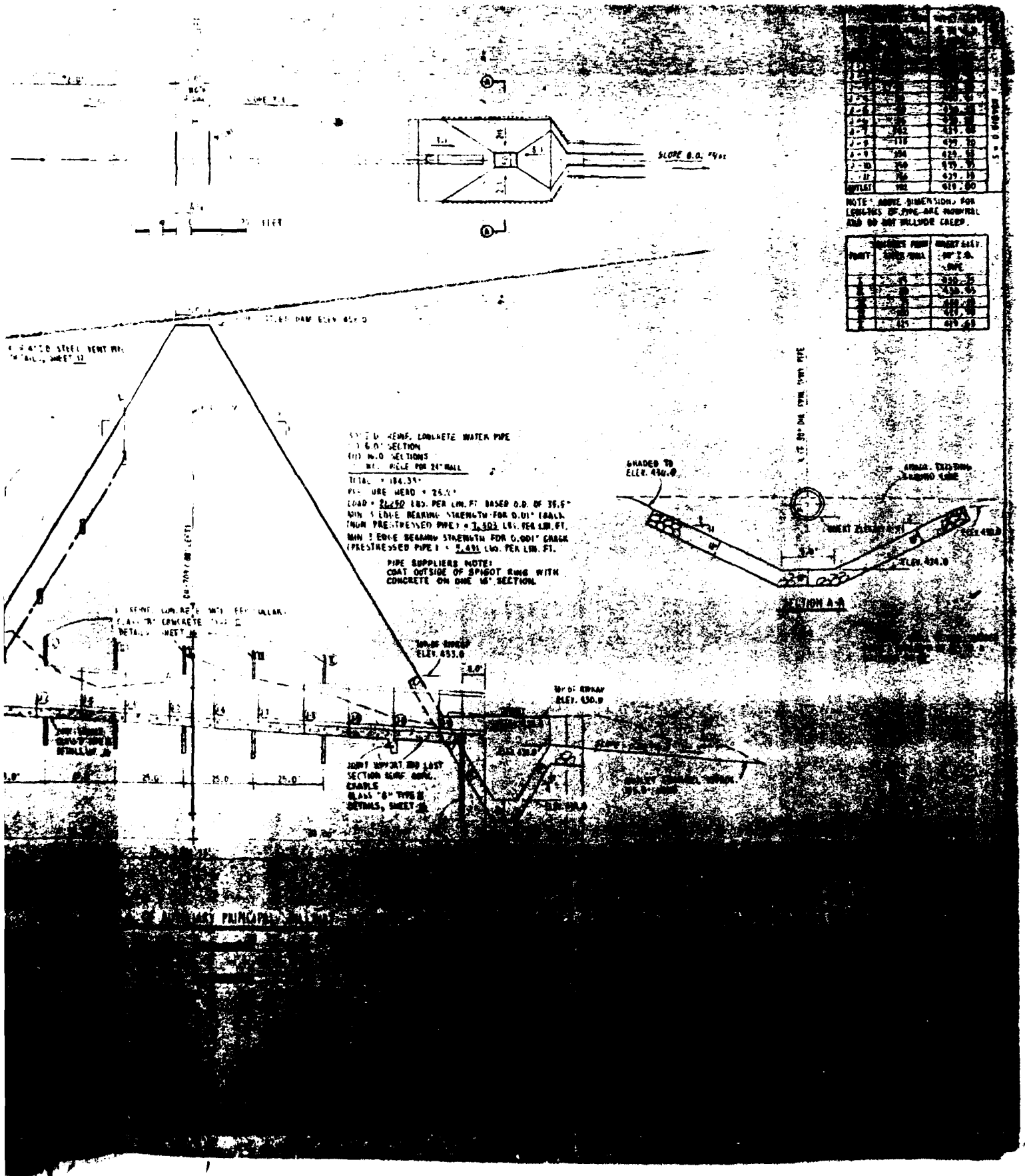
...ILLWAY - MAIN DAM

NOTE:

AS-BUILT

...RK RIVER WATERSHED PROJECT
...ER RETARDING SITE NO. 1
...DOTT RESERVOIR
...T HARTFORD, CONN.
PRINCIPAL SPILLWAY-MAIN DAM
...MENT OF AGRICULTURE
...SERVATION SERVICE


SOIL DATA
DH-709
ELEV. 458
PRINCIPAL



STEEL SCHEDULE

MARK	NO.	SIZE	TYPE	A	B	C	TOTAL WT.
							57.00
							44.00
							109.67
							69.00
							89.00
							92.59
							19.85
							39.00
							33.00
							2.25
							4.50

QUANTITY SUMMARY - THIS SHEET ONLY

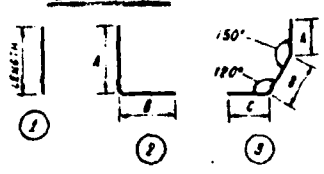
STEEL

[illegible] BARS [illegible] LBS. AT [illegible] LBS. PER LBS.

CONCRETE

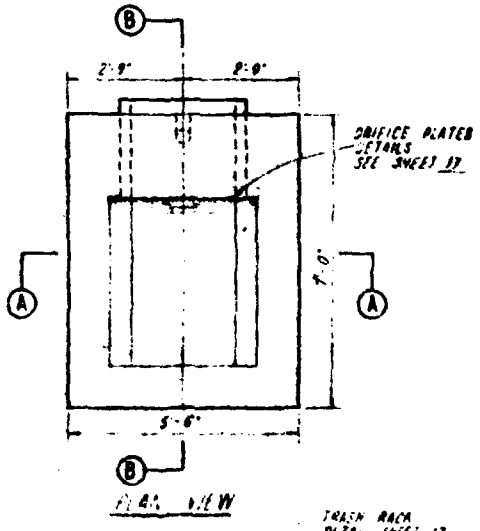
CLASS "B" TYPE I 4.0 CU YDS.

BAR TYPES

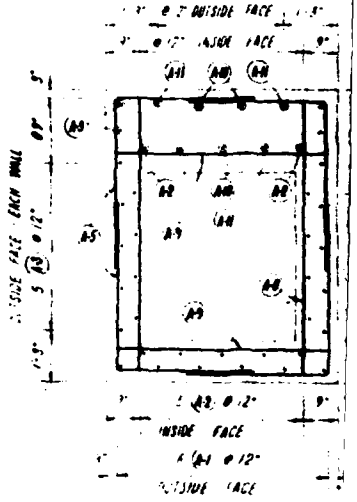


GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "
2. PORTLAND CEMENT TYPE II OR IV ADMIXTURE SHALL BE USED.
3. ALL REINF. STEEL TO BE LAPPED
4. ALL REINF. STEEL PLACED IN CO GROUND SHALL HAVE A MIN OF 3 ARE USED BARS SHALL HAVE A
5. ALL EXPOSED EDGES OF CONCRE UNLESS OTHERWISE NOTED.



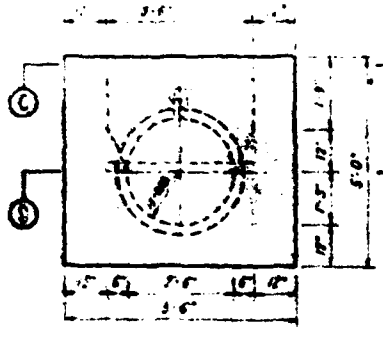
PLAN VIEW



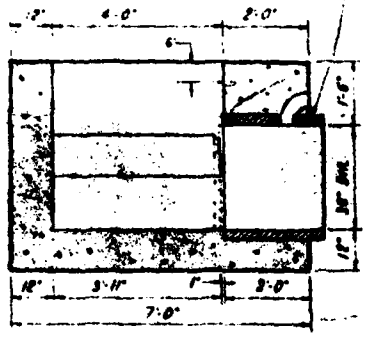
SECTION C-C

TRASH RACK DETAIL SHEET 17

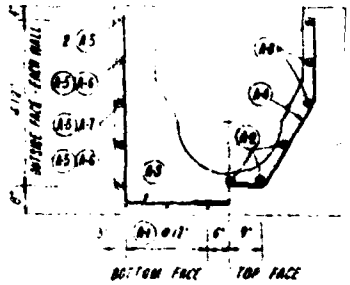
SPIGOT RING WALL FITTING DETAIL SHEET 17



UPSTREAM ELEVATION



SECTION THRU CENTERLINE



SECTION A-A

ERAL NOTES:

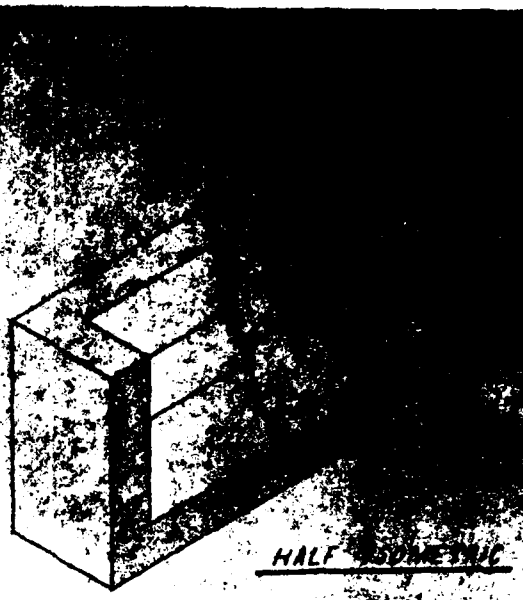
ALL CONCRETE SHALL BE CLASS "B" @ OF THE [illegible]

PORTLAND CEMENT TYPE IA OR TYPE I [illegible] AIR ENTRAINING ADMIXTURE SHALL BE USED.

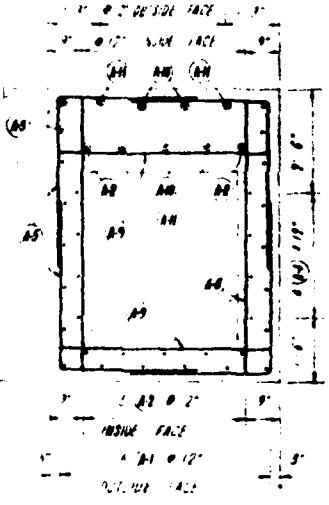
ALL REINF. STEEL TO BE LAPPED A MIN. OF 30 BAR DIA.

ALL REINF. STEEL PLACED IN CONCRETE POURED AGAINST THE GROUND SHALL HAVE A MIN OF 3" CLEAR COVER. WHERE FORMS ARE USED BARS SHALL HAVE A MIN OF 2" CLEAR COVER.

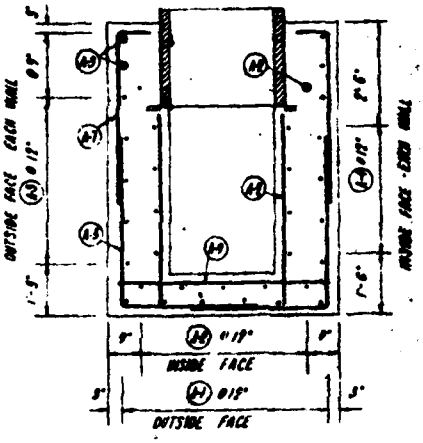
ALL EXPOSED EDGES OF CONCRETE TO HAVE A ¾" CHAMFER UNLESS OTHERWISE NOTED.



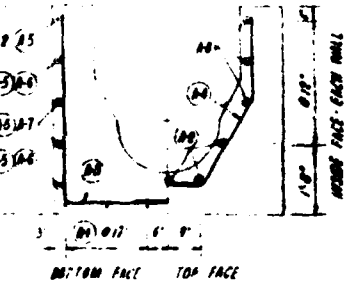
HALF [illegible]METRIC



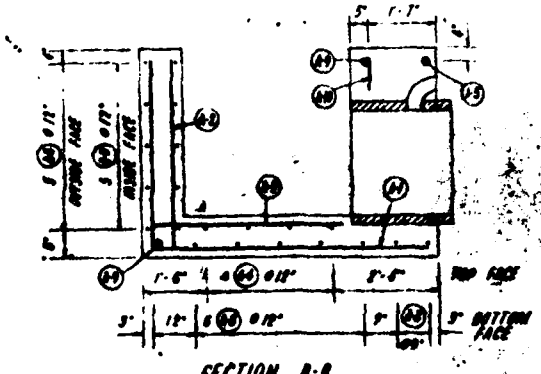
SECTION C



SECTION D-D



SECTION A-A



SECTION B-B

RIVER BASIN

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

2

STEEL SCHEDULE

	LOCATION	NUMBER	SIZE	LENGTH	TYPE	A	B	C	TOTAL FT
1	RISER	6	5	11 0	2	4-6	6-6		66.00
2			5	4-6	1				54.00
3			4	7-3	3	4-6	3-4		109.67
4			5	6-3	3	4-3	8-4	1-8	48.30
5			5	7-5	2	4	3-4		89.00
6			4		1	4	6		2.33
7			4		1	4	3-9		1.33
8			5	5-4					5.33
9									2.00
10									2.67
11			4	3-3	1				4

QUANTITY SUMMARY - THIS SHEET ONLY

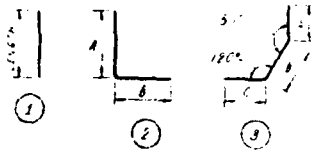
STEEL

No 5 BARS 680.68 LIN FT 509.59 LBS

CONCRETE

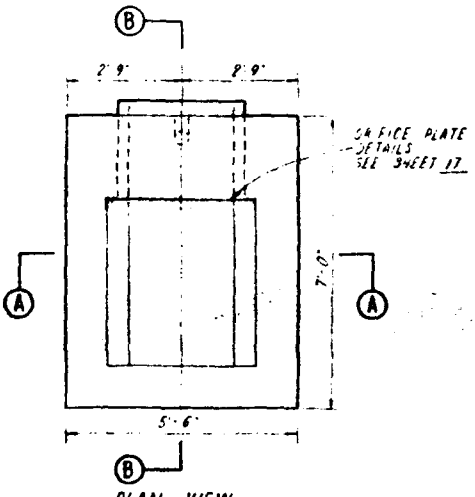
CLASS "B" TYPE I 4.9 CU YDS

BAR TYPES

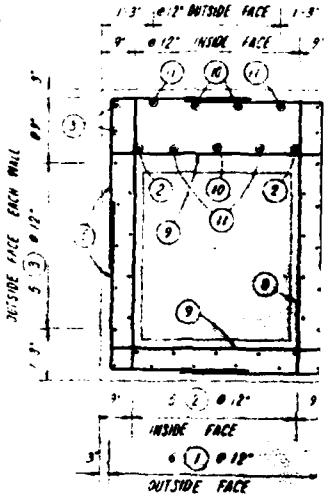


GENERAL NOTES:

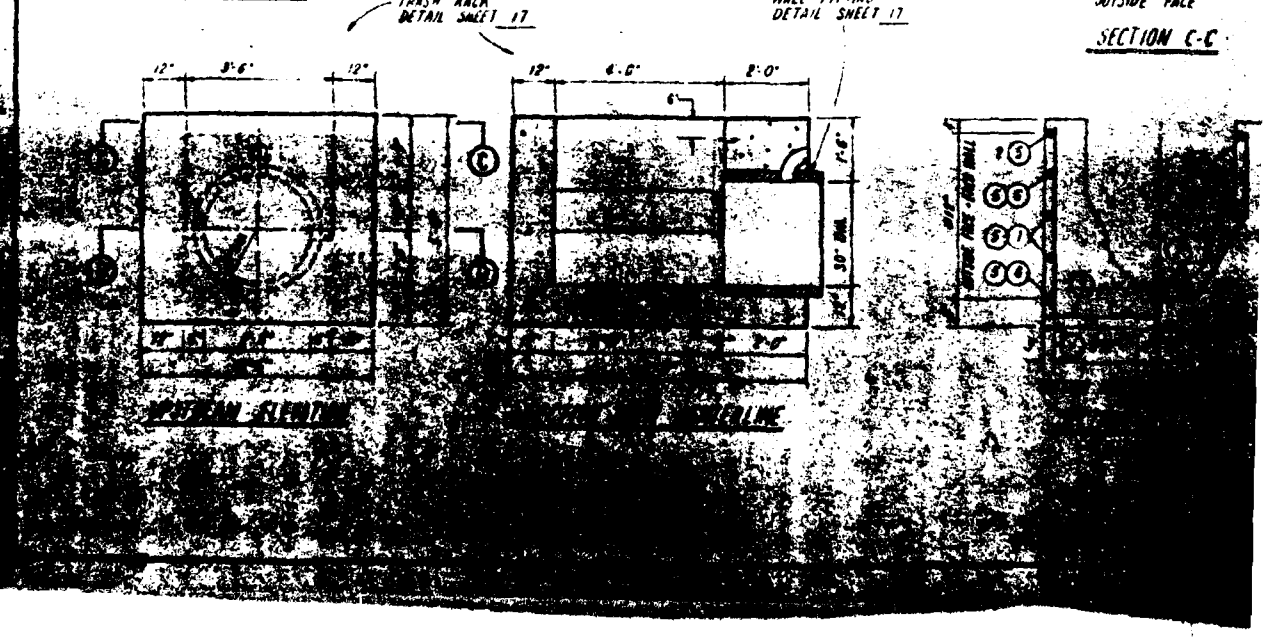
1. ALL CONCRETE SHALL BE CLA
2. PORTLAND CEMENT TYPE IA O MOISTURE SHALL BE USED.
3. ALL REINF STEEL TO BE LA
4. ALL REINF STEEL PLACED H SHOWN SHALL HAVE A MIN AND COLD BARS SHALL HAVE
5. ALL EXPOSED EDGES OF CON UNLESS OTHERWISE NOTED.



PLAN VIEW



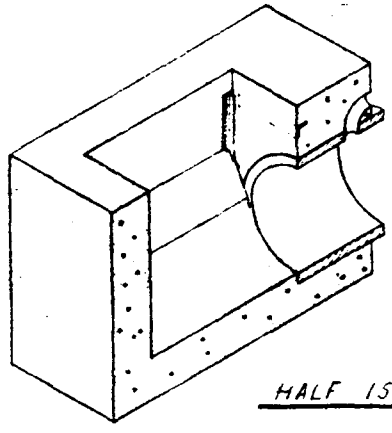
SECTION C-C



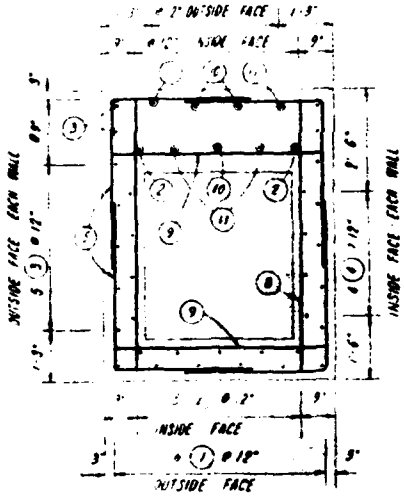
T ONLY

GENERAL NOTES:

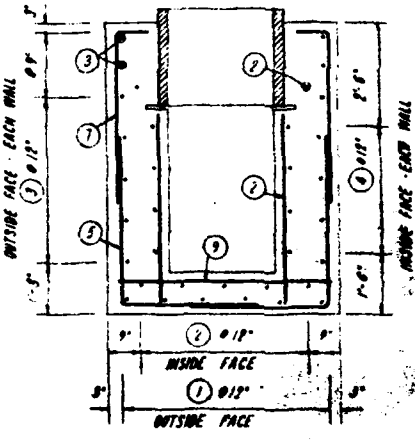
1. A. CONCRETE SHALL BE CLASS "B" & OF THE TYPE NOTED.
2. PORTLAND CEMENT TYPE IA OR TYPE I WITH AN AIR-ENTRAINING ADMIXTURE SHALL BE USED.
3. A. ALL STEEL TO BE LAPPED A MIN OF 30 BAR DIA.
4. A. ALL STEEL PLACED IN CONCRETE POURED AGAINST THE EARTH SHALL HAVE A MIN OF 3" CLEAR COVER. WHERE FORMS ARE USED SHALL HAVE A MIN OF 2" CLEAR COVER.
5. A. ALL EXPOSED EDGES OF CONCRETE TO HAVE A ¾" CHAMFER UNLESS OTHERWISE NOTED.



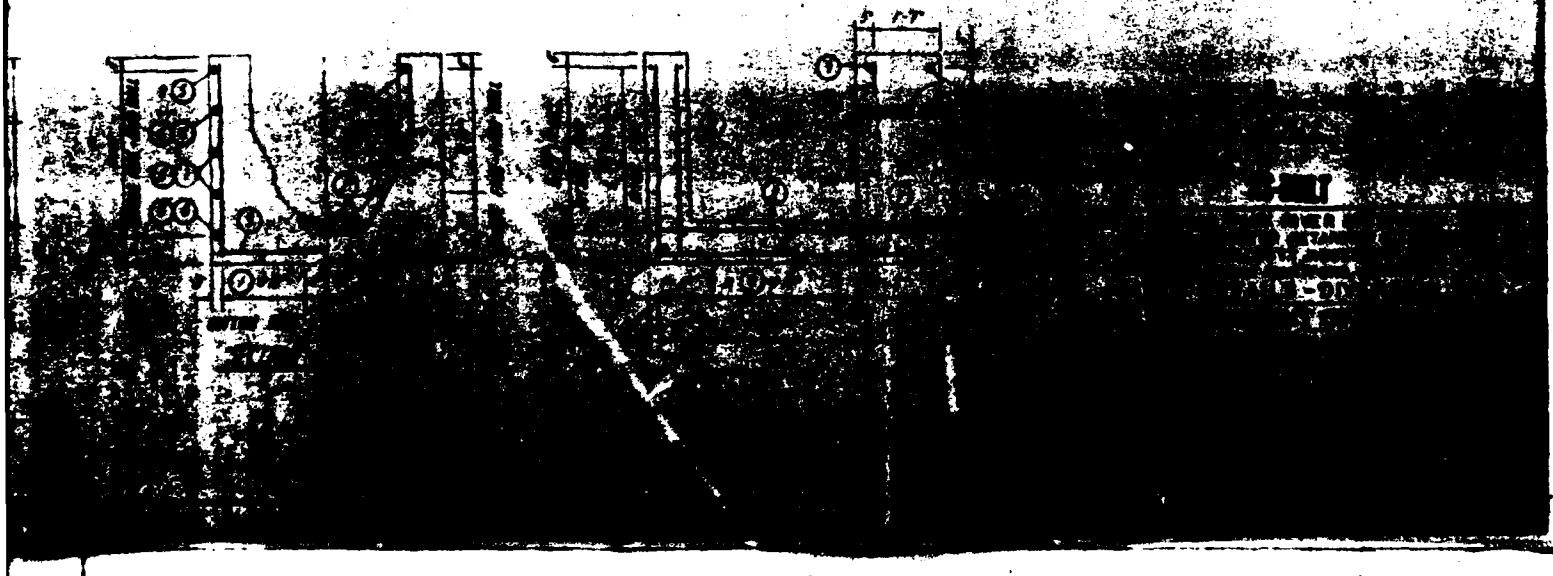
HALF ISOMETRIC

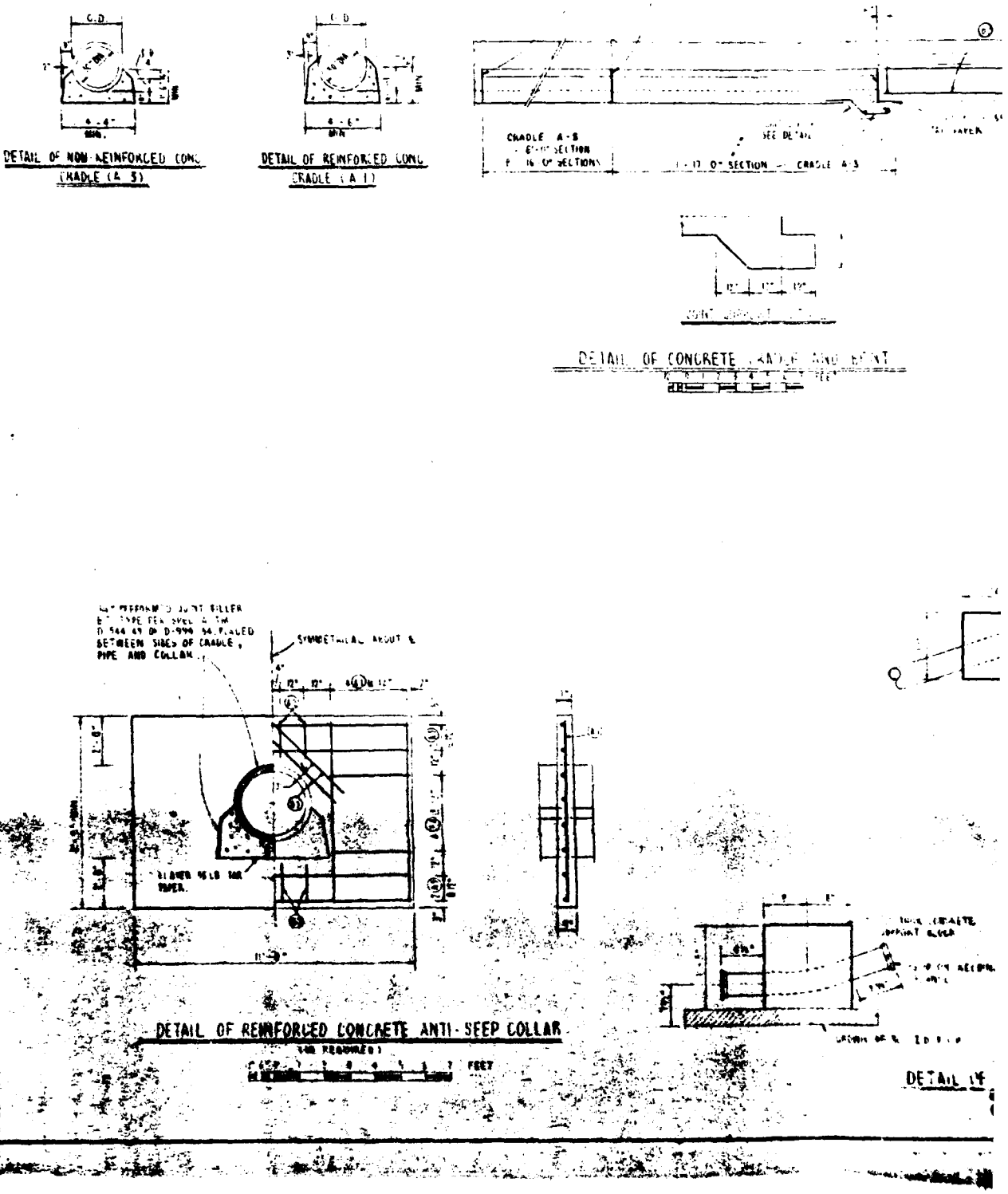


SECTION C-C



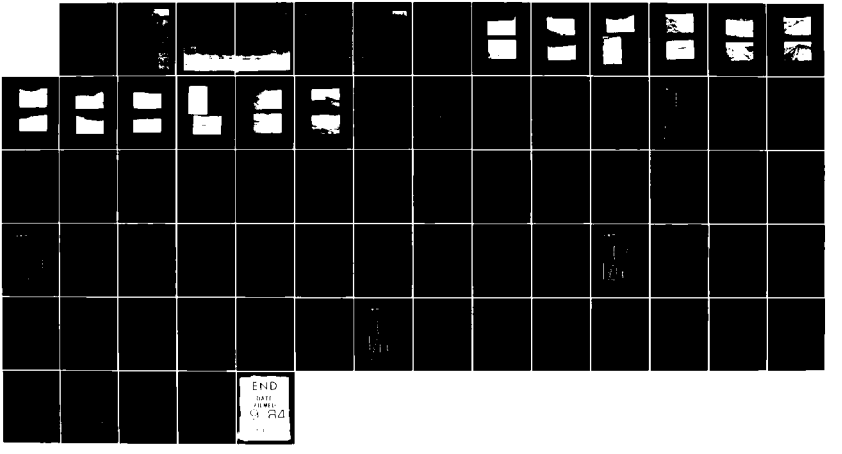
SECTION D-D

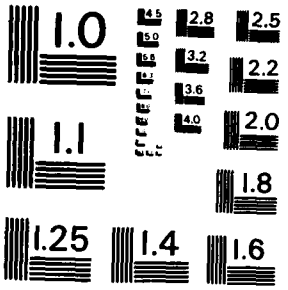


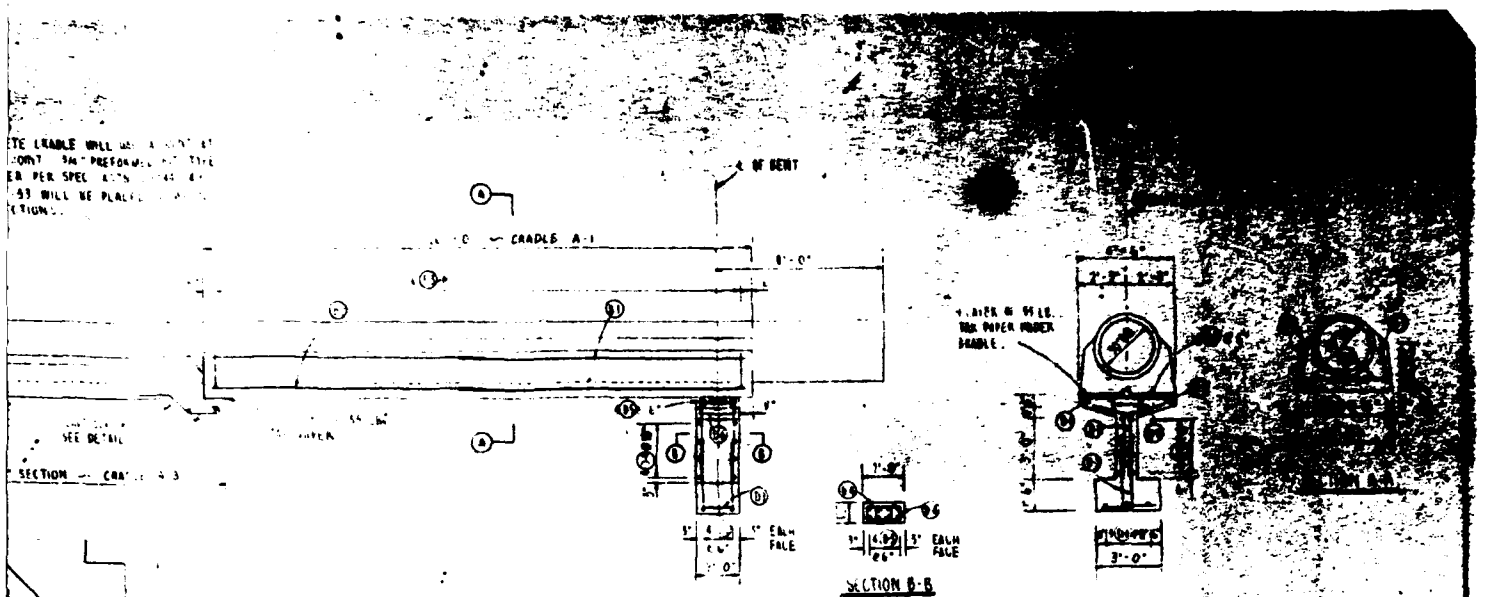

DETAIL OF NON-REINFORCED CONC CRADLE (A-5)
DETAIL OF REINFORCED CONC CRADLE (A-1)
CRADLE A-5
CRADLE A-3
DETAIL OF CONCRETE CRADLE AND JOINT
SYMMETRICAL ABOUT ℄
DETAIL OF REINFORCED CONCRETE ANTI-SEEP COLLAR
FEET

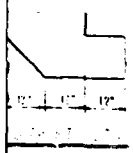
AD-A144 588 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS TALCOTT RESERVOIR DAM..(U) CORPS OF ENGINEERS WALTHAM MA NEW ENGLAND DIV MAY 81 2/2

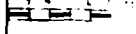
UNCLASSIFIED F/G 13/13 NL

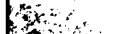


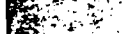


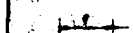


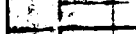


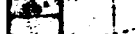


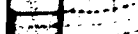


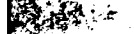


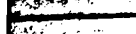












TE CRADLE WILL [illegible]
JOINT [illegible] PREFORMED [illegible] TYPE
ER PER SPEC [illegible]
.57 WILL BE PLACED [illegible]
CTIONS.

TE CRADLE AND BENT

MARK	LOCATION	QUAN	SIZE	LENGTH	TYPE	A	B	C	TOTAL FT.
A-1	COLLAR (10)	90	4	5-8	1				510.00
A-2	DIKE & DAM	90	4	1-6	1				120.00
A-3		40	4	10-3	1				[illegible]
A-4		30	4	4-0	1				[illegible]
A-5		40	4	9-0	1				[illegible]
B-1	CRADLE	8	6	[illegible]	1				[illegible]
B-2		16	6	[illegible]	1				[illegible]
B-3		52	5	7-6	4	1-9	4-0	1-9	[illegible]
C-1	[illegible]	10	5	6-10	5	[illegible]	[illegible]	[illegible]	[illegible]
C-2		4	4	[illegible]	1				[illegible]
D-1	BENT-DIKE-DAM	10	4	[illegible]	1				[illegible]
D-2		16	6	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
D-3		16	6	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
D-4		[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D-5		5	4	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
D-6		[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BAR TYPES

DETAIL OF [illegible] BENT CONCRETE SUPPORT BLOCKS

FEET

QUANTITIES - THIS SHEET ONLY

STEEL — CONCRETE

NO. 4 BARS [illegible] LIN. FT. [illegible]

NO. 5 BARS [illegible] LIN. FT. [illegible]

NO. 6 BARS [illegible] LIN. FT. [illegible]

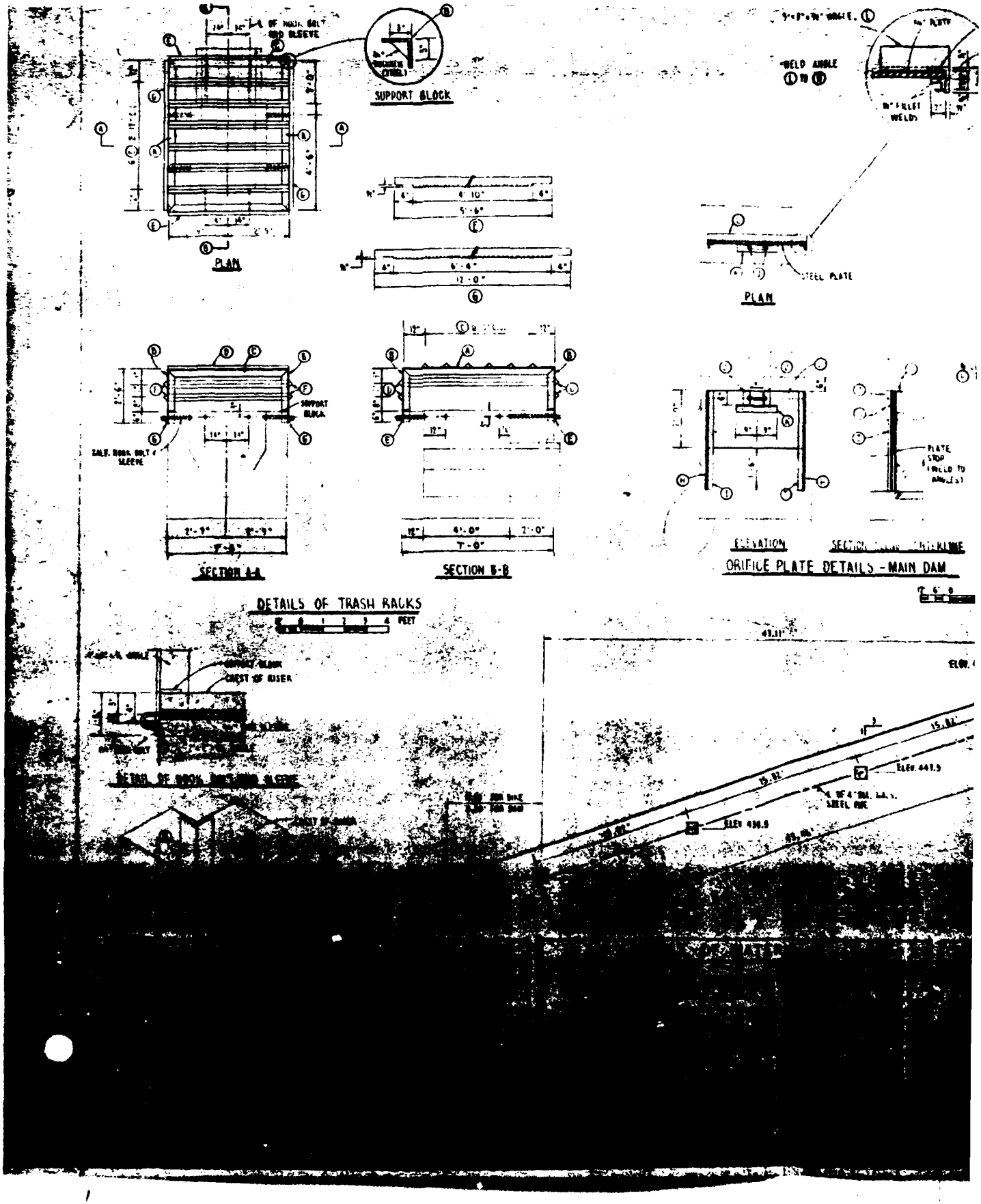
NO. 8 BARS [illegible] LIN. FT. [illegible]

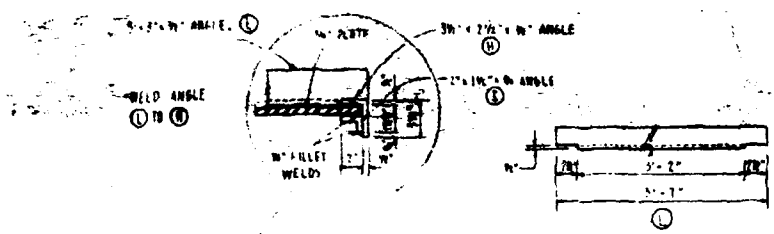
DETAILS FOR MAIN DAM & DIVERSION DIKE

SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. [illegible]
TALCOTT RESERVOIR
WEST HARTFORD, CONN.

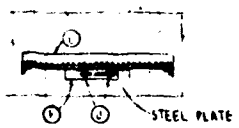
CRADLE - COLLAR & BENT DETAILS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

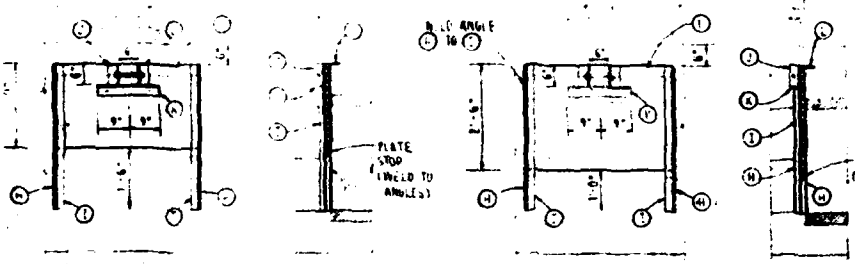

SUPPORT BLOCK
PLAN
SECTION A-A
SECTION B-B
PLAN
ORIFICE PLATE DETAILS - MAIN DAM
DETAILS OF TRASH RACKS
CREST OF RISER
ELEV. 441.5
ELEV. 436.5



PLAN



PLAN

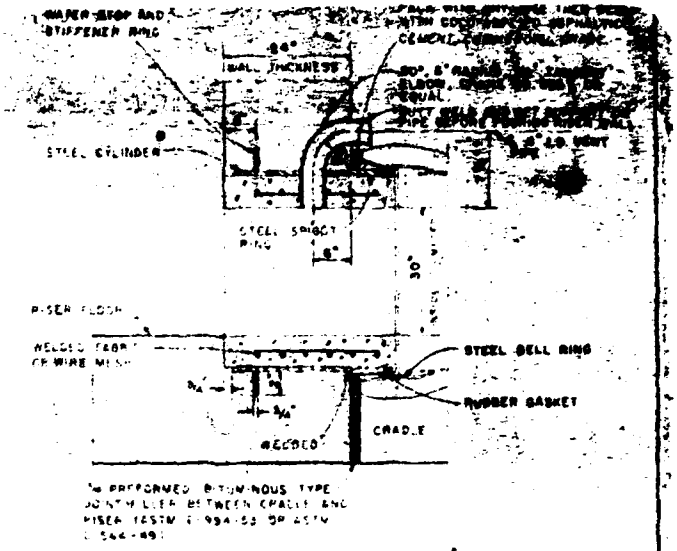


ELEVATION SECTION ALONG CENTERLINE

ORIFICE PLATE DETAILS - MAIN DAM

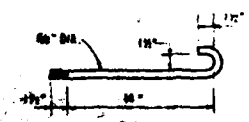
ELEVATION SECTION ALONG CENTERLINE

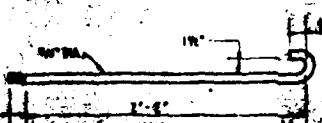
ORIFICE PLATE DETAILS - DIVERSION DIKE



SPIGOT RING WALL FITTING

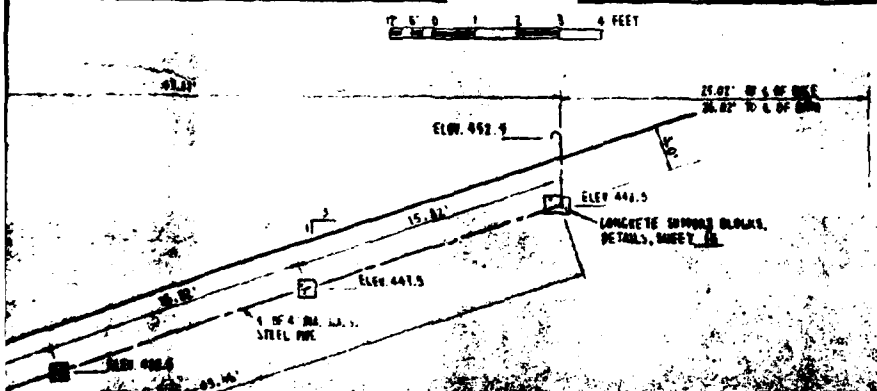
(NOT TO SCALE)

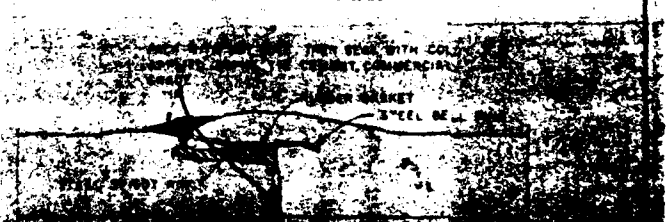


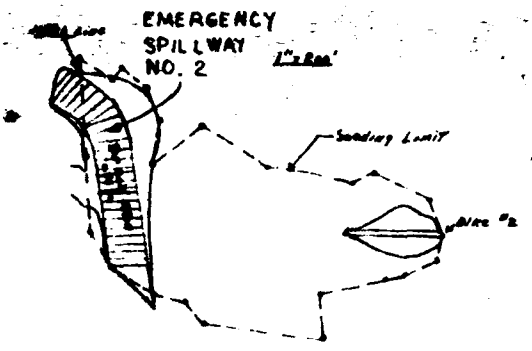


DETAILS OF GALV. HOOK BOLTS

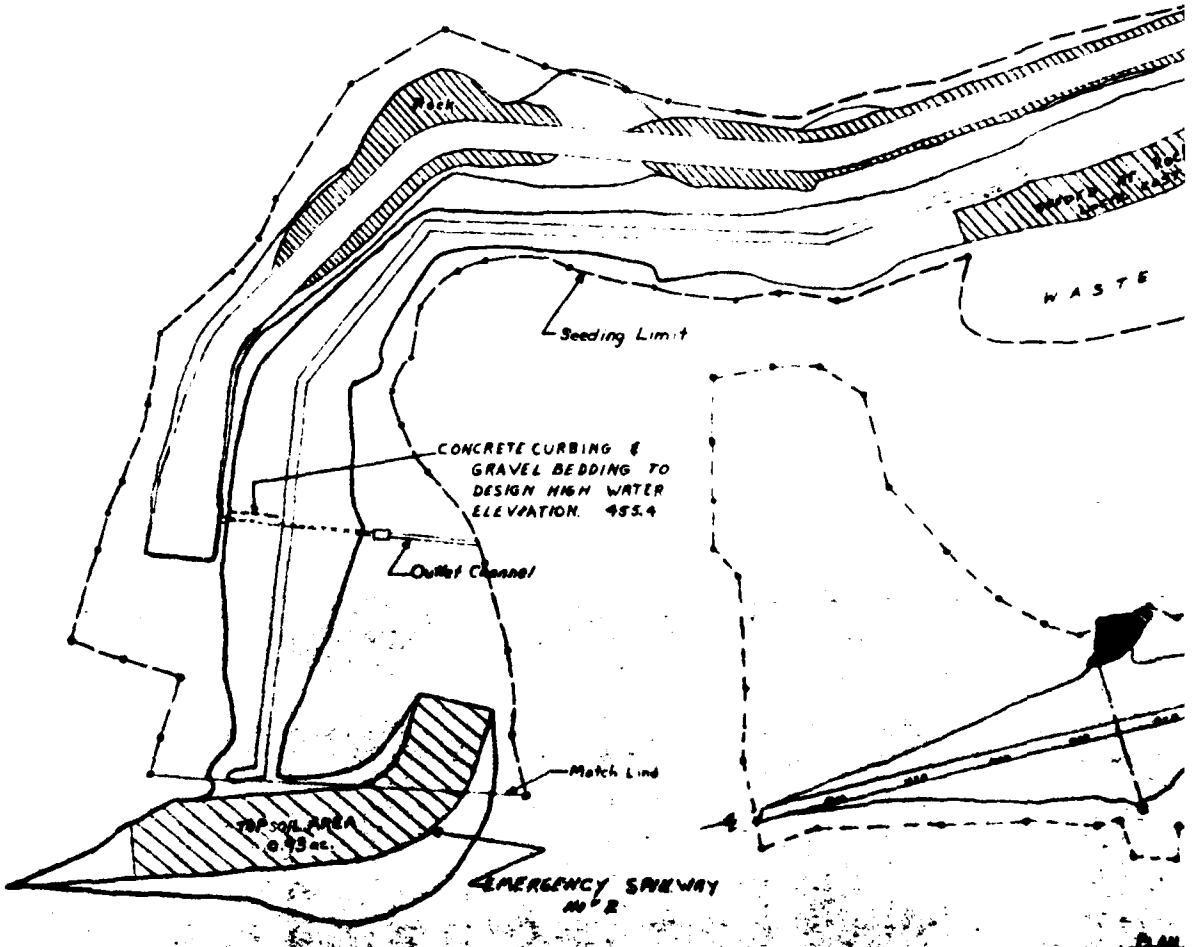
(NOT TO SCALE)

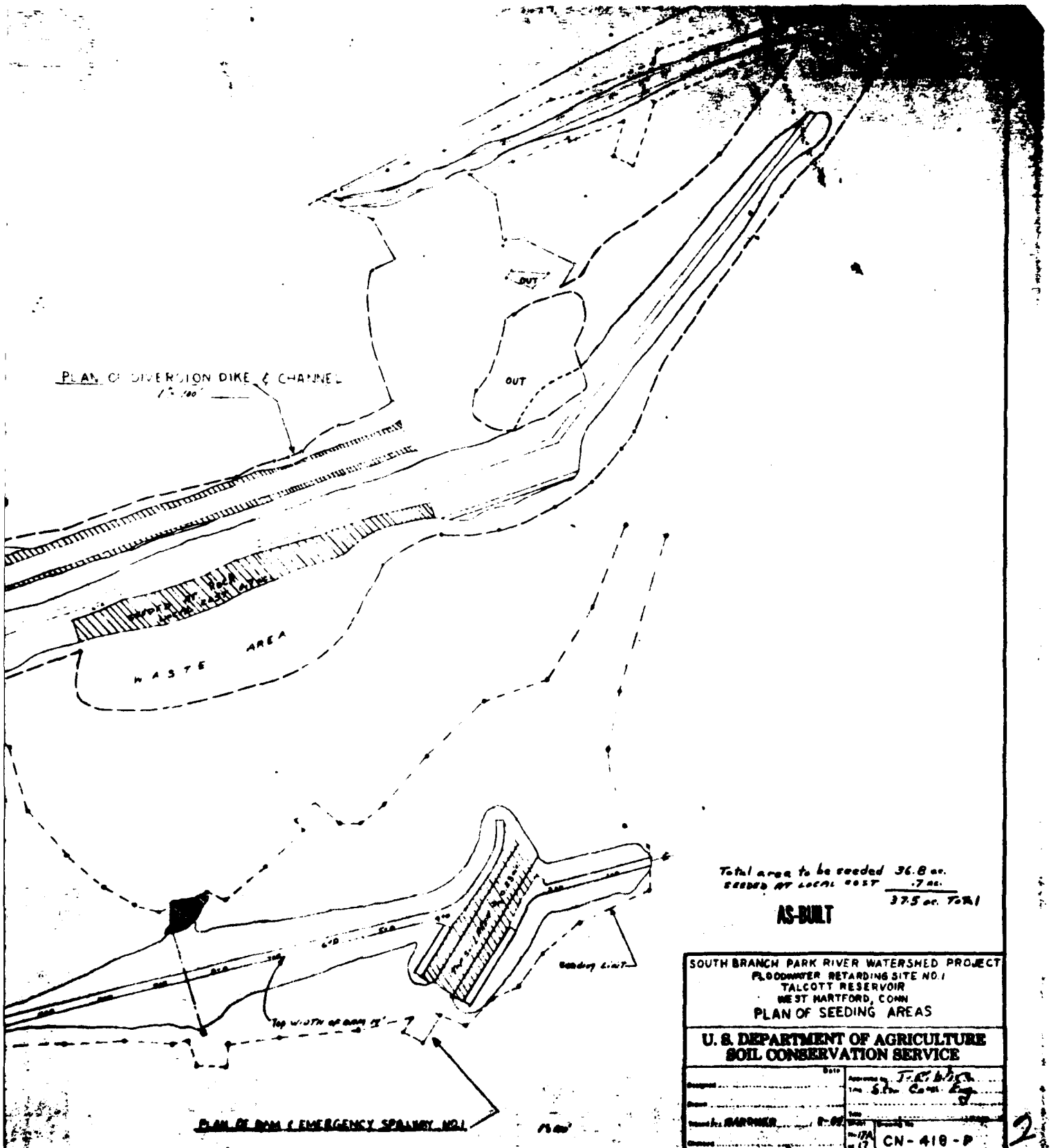






PLAN OF DIVERSION D
1" = 100'





Total area to be seeded 36.8 ac.
seeded at local cost .7 ac.
37.5 ac. Total

AS-BUILT

SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN
PLAN OF SEEDING AREAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

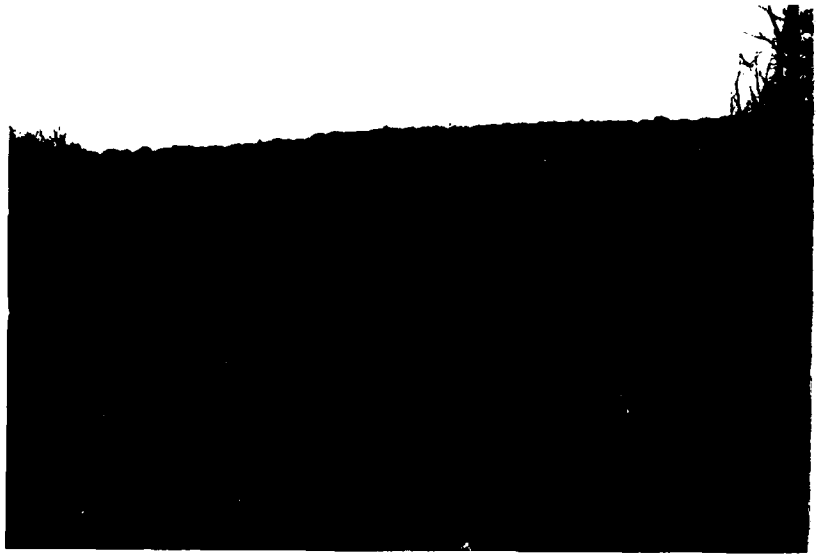
Designed ..... Date
Drawn .....
Traced by MARINER
Checked .....
Approved by J. E. Bibb
Title State Conn. Engr.
Date
Scale
Drawing No. CN-418-P

2

FORM SCS 313 (APRR 1960)

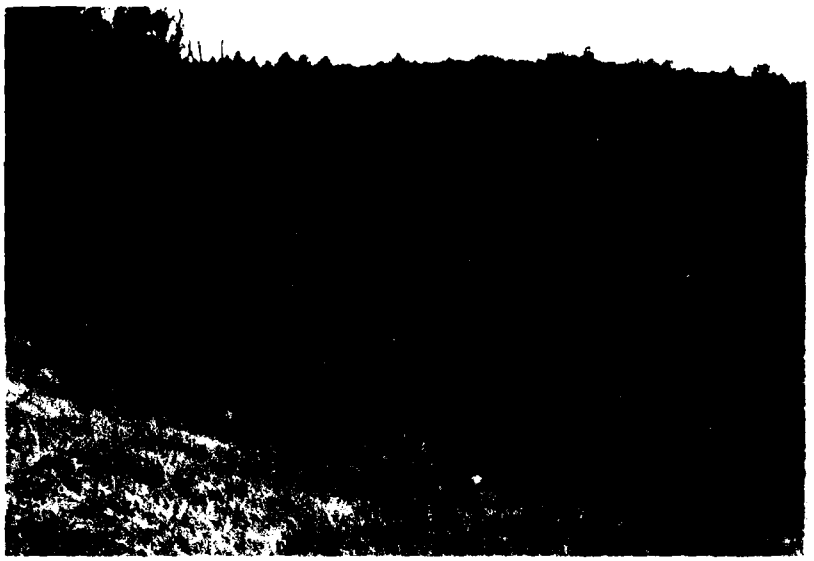
APPENDIX C

PHOTOGRAPHS



C-1 TOP OF DAM - LOOKING EAST TOWARD EMERGENCY SPILLWAY

C-2 UPSTREAM FACE OF EASTERN SIDE OF DAM - LOOKING EAST.



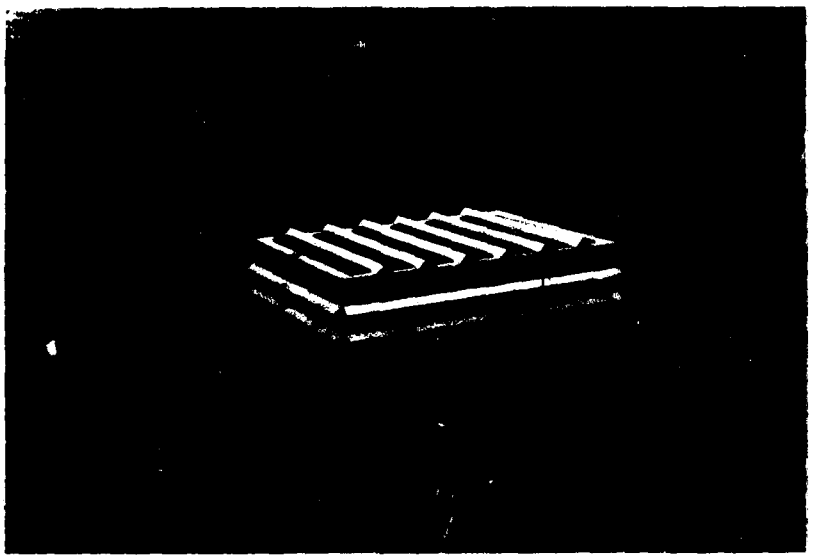
C-3 DOWNSTREAM FACE OF WESTERN SIDE OF DAM - LOOKING WEST

C-4 UPSTREAM FACE OF WESTERN SIDE OF DAM - LOOKING WEST

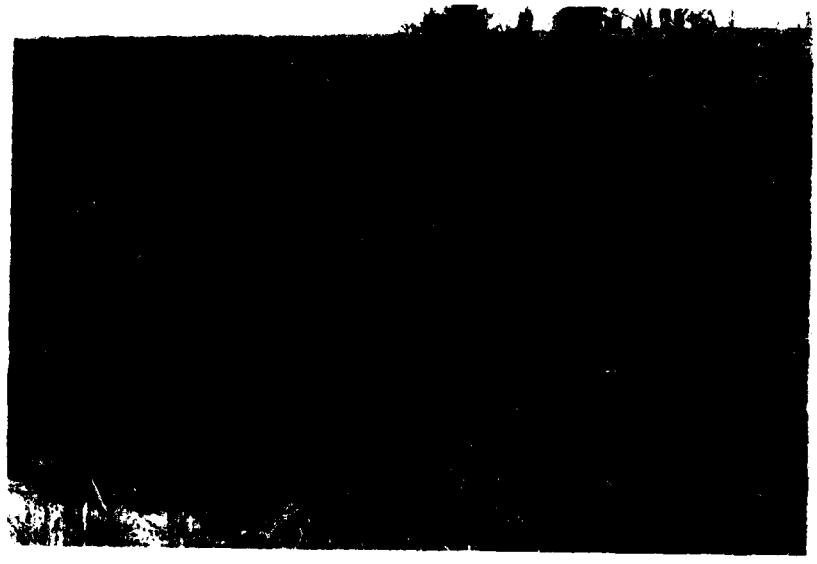
C-5 EMERGENCY SPILLWAY - LOOKING UPSTREAM

C-6 HOLE IN FLOOR OF EMERGENCY SPILLWAY NEAR DOWNSTREAM END

C-7 ANIMAL BURROW IN DOWNSTREAM FACE OF WESTERN SIDE OF DAM NEAR EMERGENCY SPILLWAY



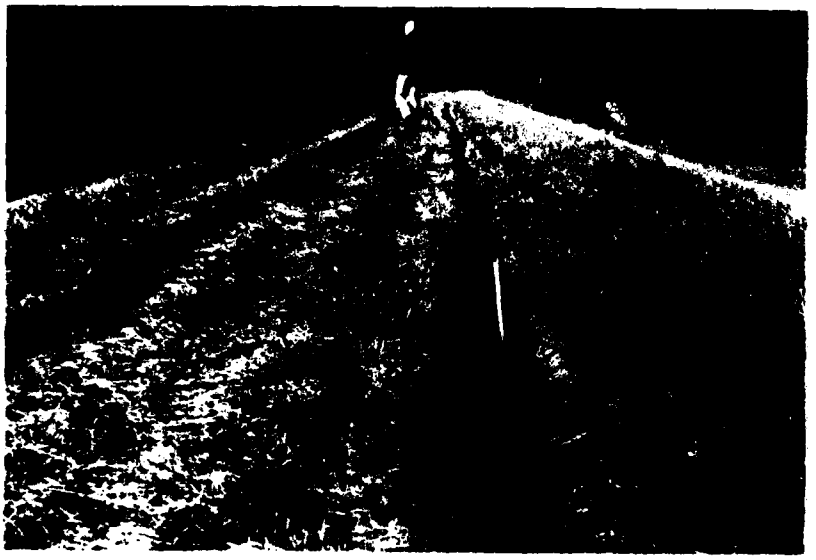
C-8 PRINCIPAL SPILLWAY INLET



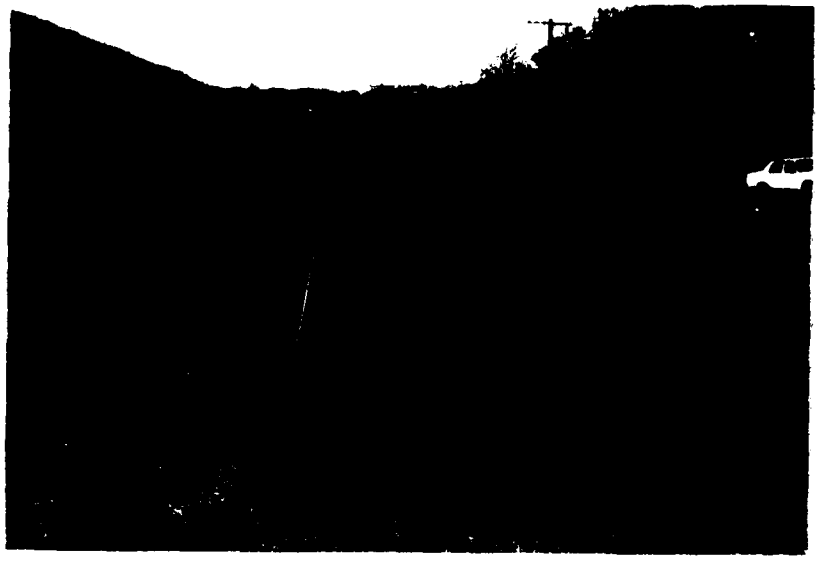
C-9 PRINCIPAL SPILLWAY OUTLET - LOOKING NORTH. NOTE ANIMAL TRAIL ON EMBANKMENT.

C-10 PRINCIPAL SPILLWAY OUTLET, STILLING POOL AND DOWNSTREAM CHANNEL - LOOKING SOUTH

C-11 TOP OF DIKE AT WEST END OF DIKE - LOOKING EAST. APPROXIMATELY STATION 0 TO 11.



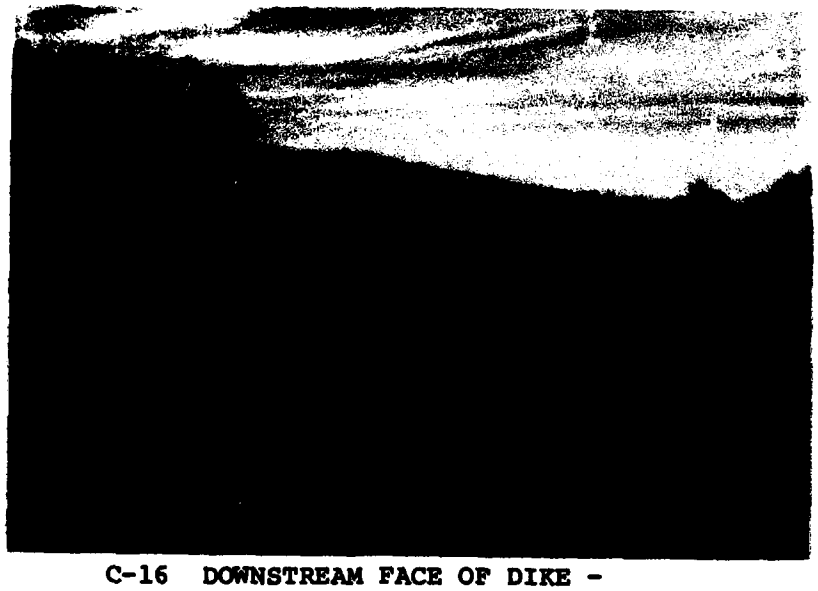
C-12 WHEEL RUTS IN TOP OF DIKE - LOOKING WEST. APPROXIMATELY STATION 26 TO 22.



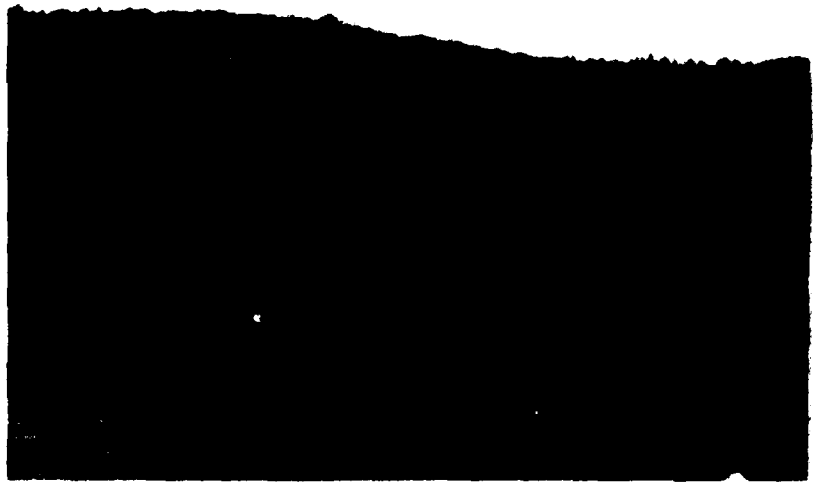
C-13 SEEPAGE AREA AT TOE OF DOWNSTREAM EMBANKMENT - LOOKING NORTH. APPROXIMATELY STATION 8.

C-14 ROCK FILL AREA OF DOWNSTREAM FACE - LOOKING WEST. APPROXIMATELY STATION 13 TO 16.

C-15 UPSTREAM FACE OF DIKE AND START OF DIVERSION CHANNEL - LOOKING SOUTH. APPROXIMATELY STATION 7 TO 19.

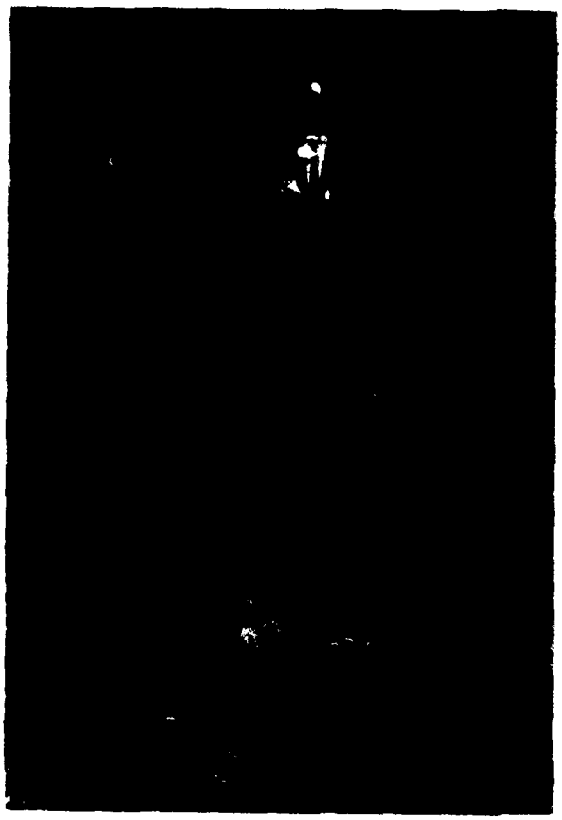


C-16 DOWNSTREAM FACE OF DIKE - LOOKING NORTH. APPROXIMATELY STATION 22 TO 15.

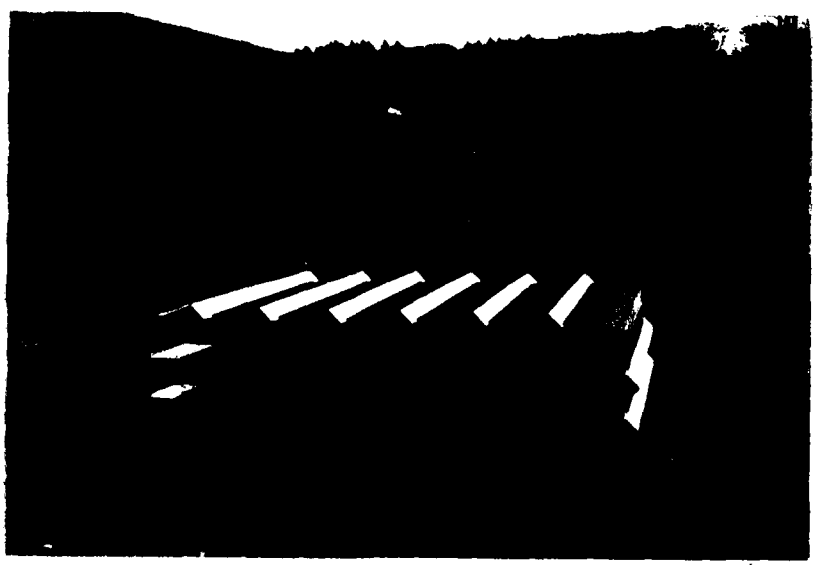


C-17 EMERGENCY SPILLWAY AND UPSTREAM FACE OF DIKE AT EASTERN END - LOOKING WEST. APPROXIMATELY STATION 30 TO 23.

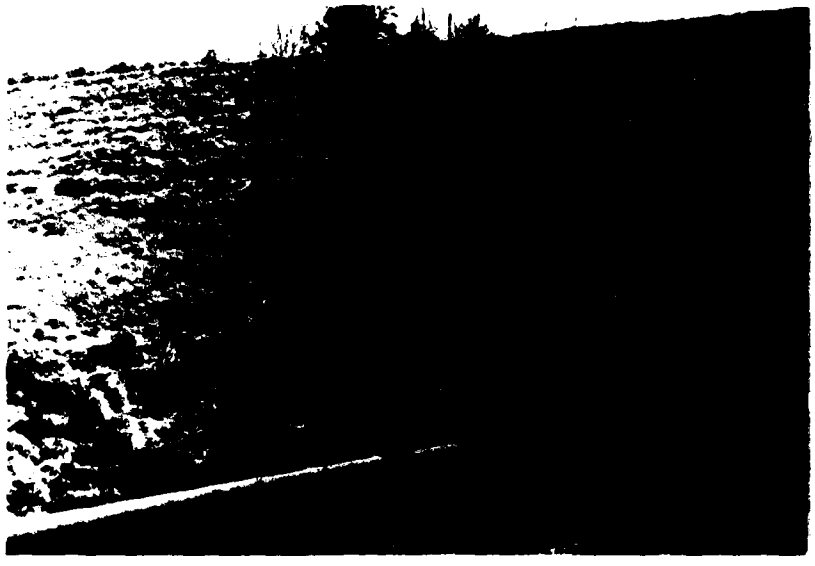
C-18 EMERGENCY SPILLWAY - LOOKING UPSTREAM FROM DOWNSTREAM END.



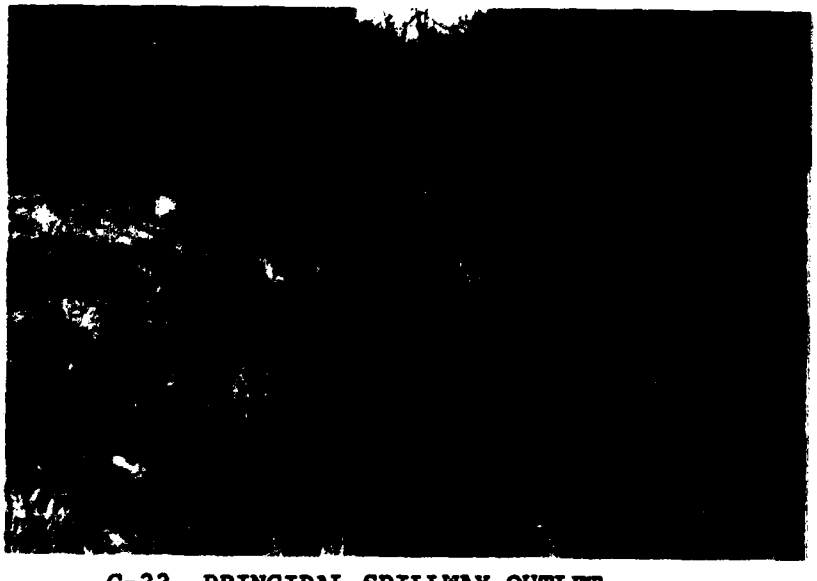
C-19 EROSION OF UPSTREAM FACE BELOW PRINCIPAL SPILLWAY VENT.



C-20 PRINCIPAL SPILLWAY INLET



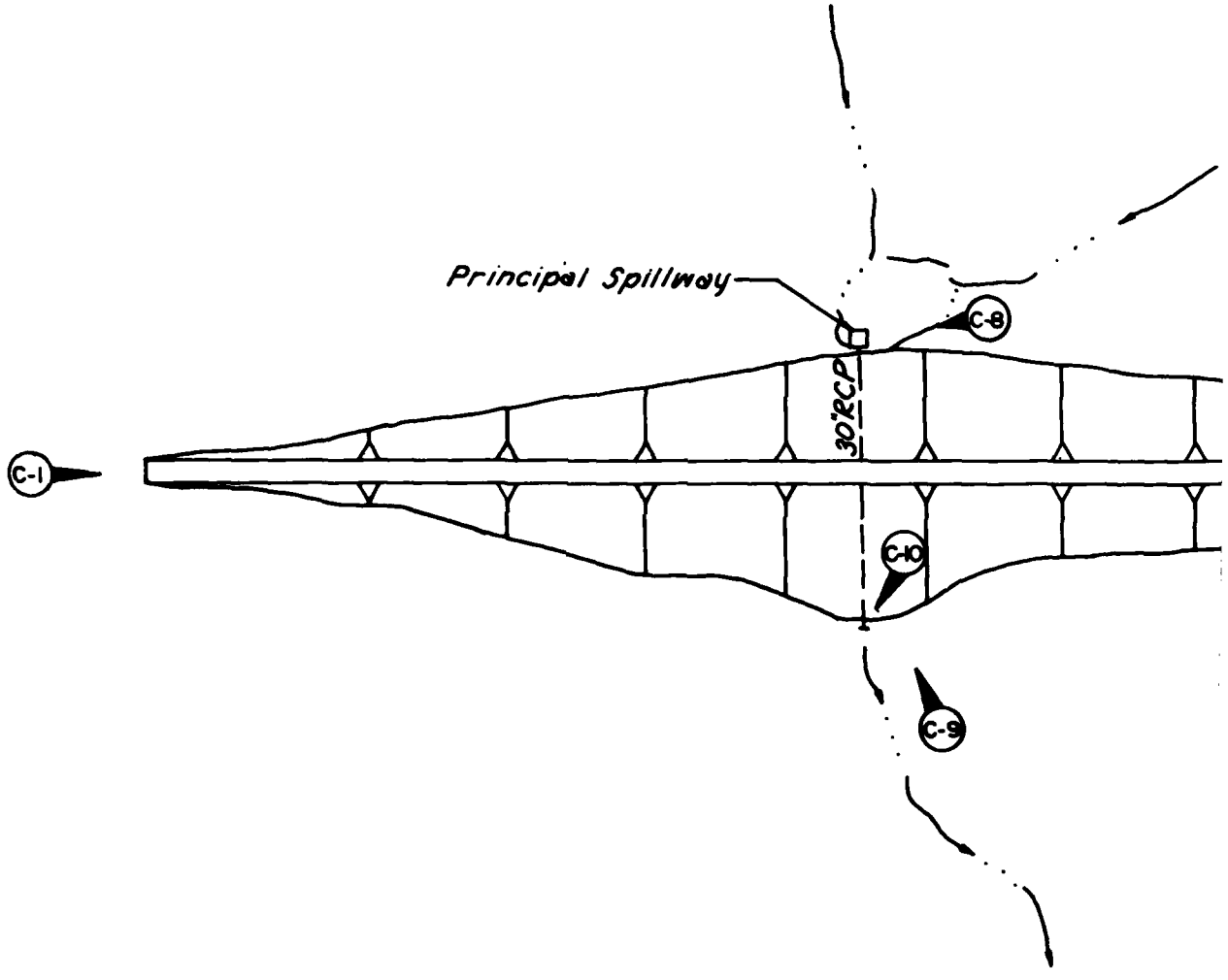
C-21 SLOUGHING OF DOWNSTREAM EMBANKMENT AROUND PRINCIPAL SPILLWAY OUTLET.



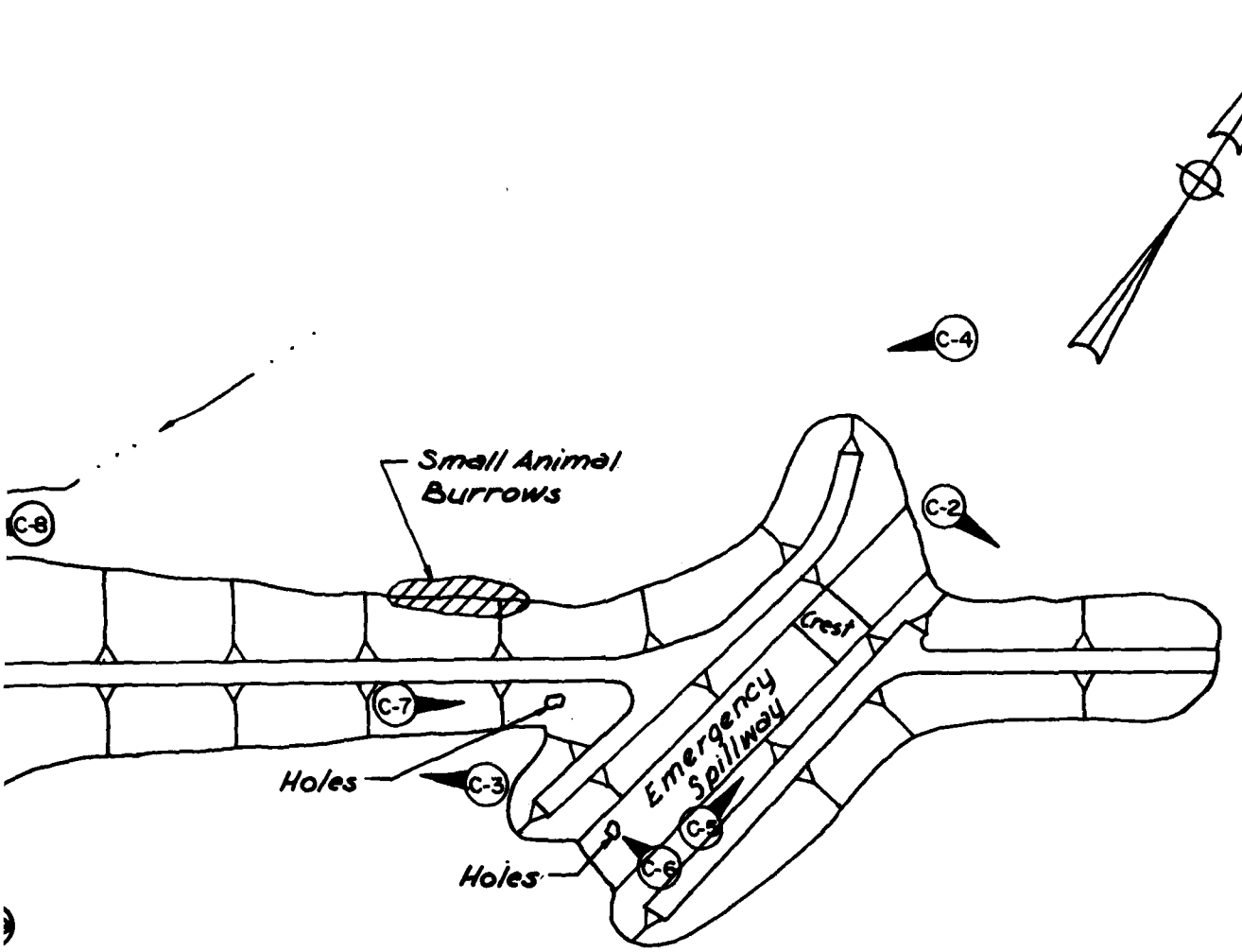
C-22 PRINCIPAL SPILLWAY OUTLET, STILLING POOL, AND DISCHARGE CHANNEL.

C-23 TOP OF DIKE NO. 2 - LOOKING EAST

C-24 UPSTREAM FACE OF DIKE NO. 2 - LOOKING EAST

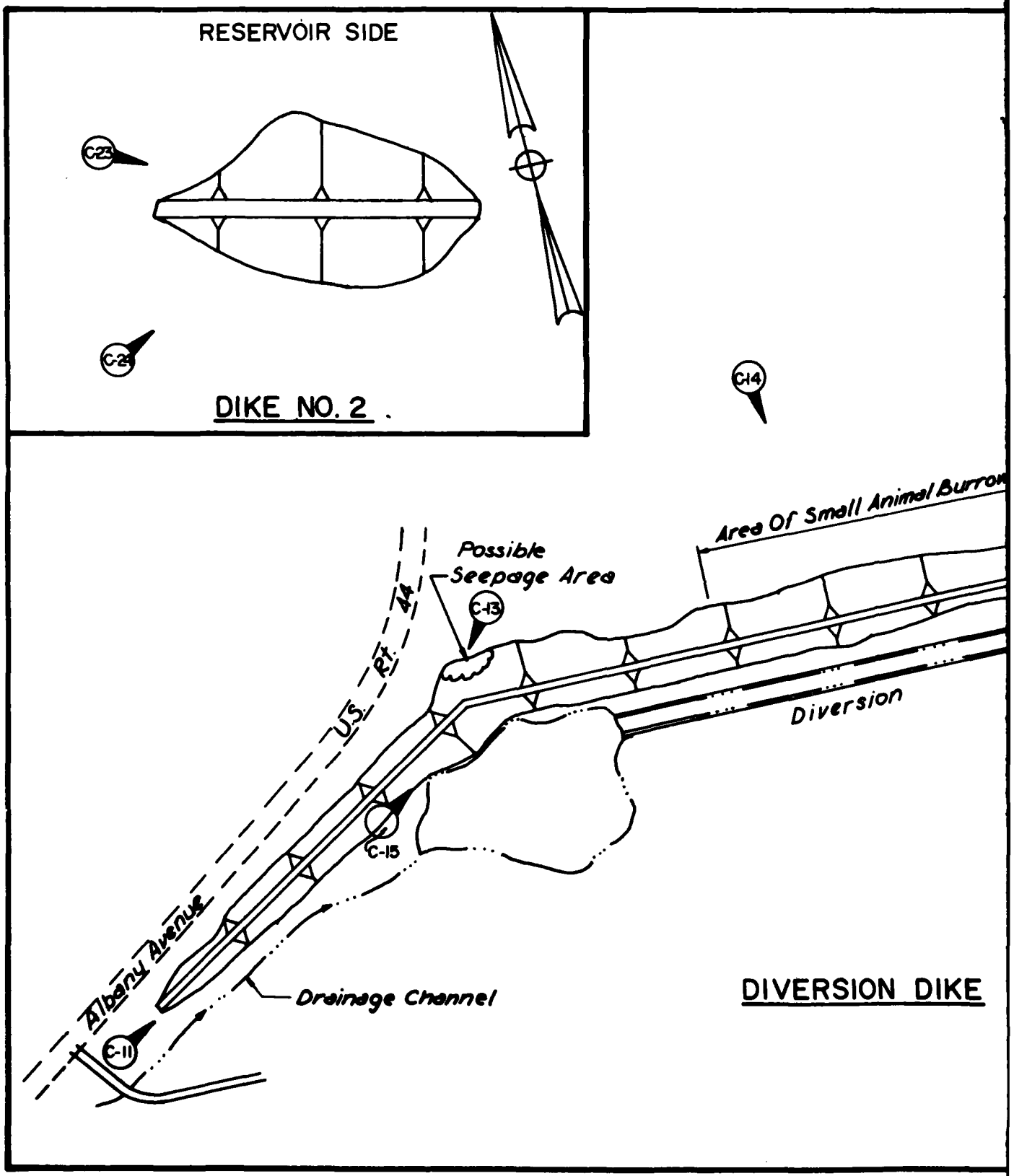


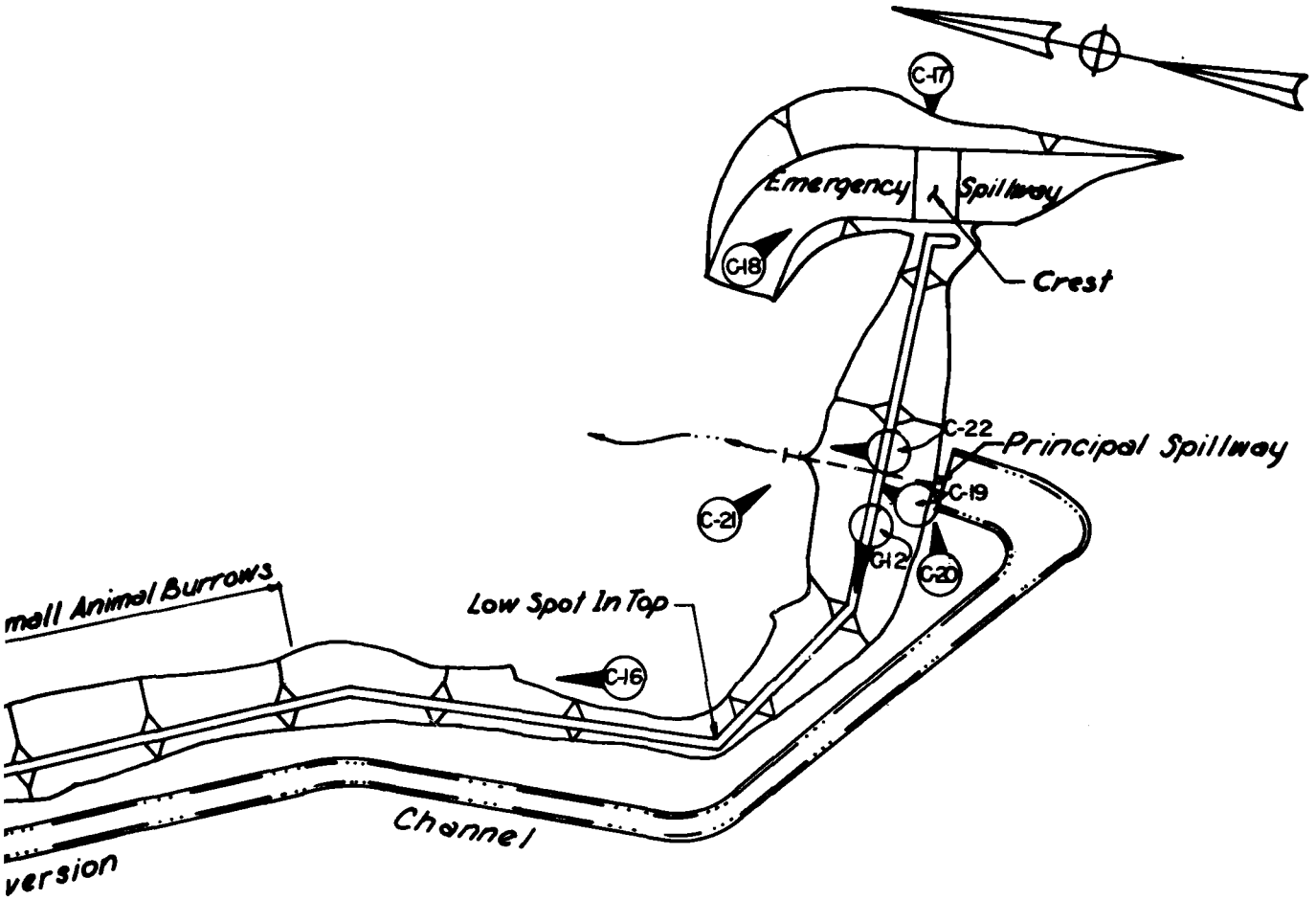
MAIN DAM



TALCOTT RESERVIOR DAM
PHOTO INDEX

2


RESERVOIR SIDE
C-23
C-24
DIKE NO. 2
C-14
Area Of Small Animal Burrow
Possible
Seepage Area
C-13
U.S. Rt. 44
Diversion
C-15
Albany Avenue
Drainage Channel
C-11
DIVERSION DIKE



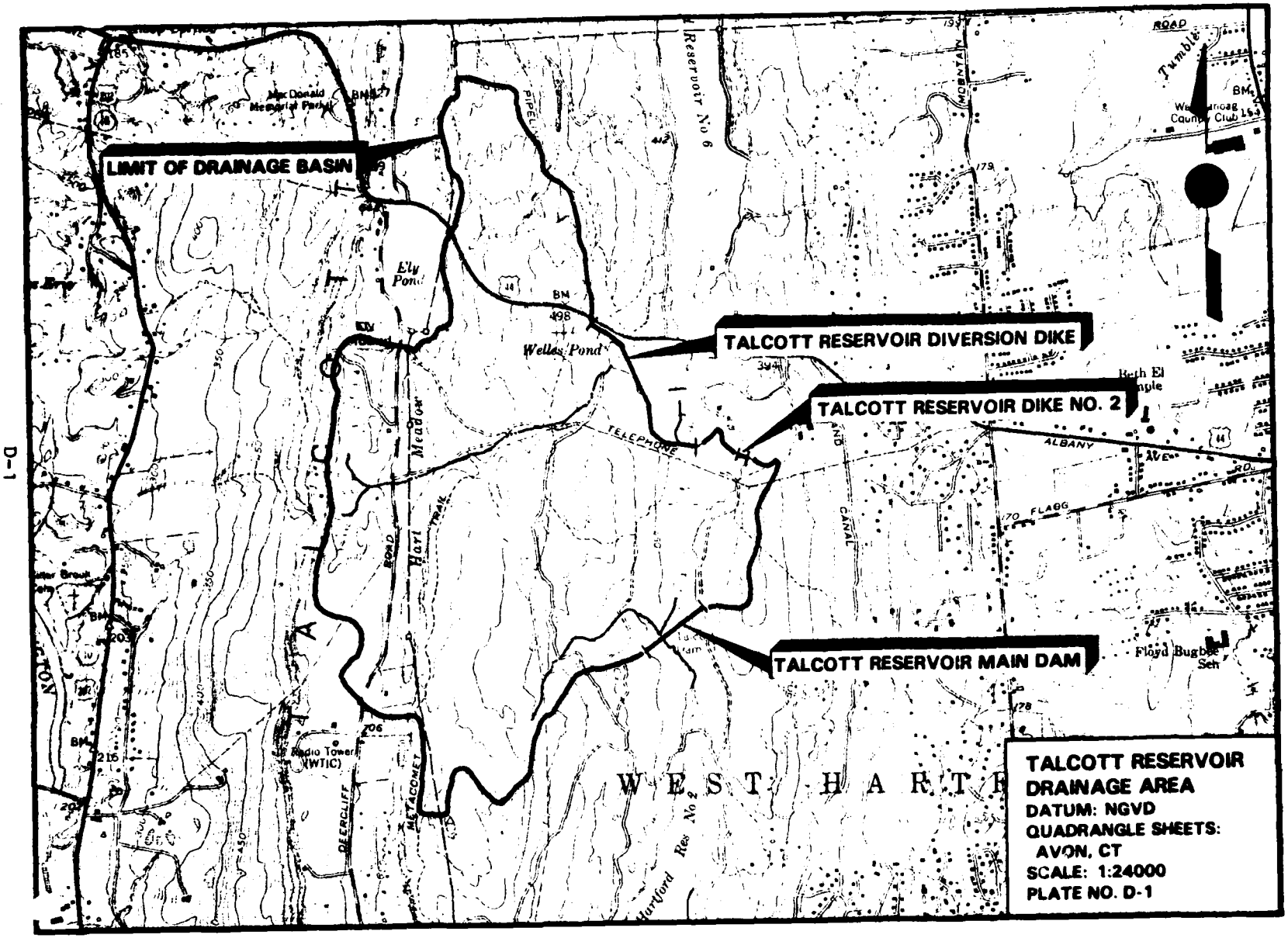
RSION DIKE

TALCOTT RESERVOIR DAM
PHOTO INDEX

2

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS


LIMIT OF DRAINAGE BASIN
TALCOTT RESERVOIR DIVERSION DIKE
TALCOTT RESERVOIR DIKE NO. 2
TALCOTT RESERVOIR MAIN DAM
Reservoir No 6
Ely Pond
Wells Pond
Hart Meadow
TELEPHONE
ROAD
ALBANY
AVE.
TRAIL
CANAL
DEERCLIFF
METACOMET
Hartford Res No 2
Radio Tower (WTIC)
Floyd Bugbee Sch
WEST HARTF
TALCOTT RESERVOIR
DRAINAGE AREA
DATUM: NGVD
QUADRANGLE SHEETS:
AVON, CT
SCALE: 1:24000
PLATE NO. D-1

D-1

HYDROLOGIC AND HYDRAULIC ANALYSIS
SUMMARY SHEET

Dam Talcott Reservoir

Test Flood PMF

INFLOW HYDROGRAPH DEVELOPMENT

Drainage Area 1.61 sq. mi.

Probable Maximum Precipation
24 hour - 200 square mile PMP 21.5 inches

Initial Railfall Loss 0 Inch
Uniform Railfall loss .1 Inch

Snyder's Lag 2.9 hours
Snyder's Peaking Coefficient .625

Test Flood Inflow 4047 CFS

PMF Inflow 4047 CFS

RESERVOIR ROUTING AND DAM OVERTOPPING

Test Flood Outflow 2666 CFS

Spillway Capacity at Top of Dam 5400 CFS (All spillways)
203 % of Test Flood

Flow Over Spillway at Test Flood 2535 CFS (Both Emergency Spillways)

Spillway Crest Elevation 452.5 Feet (Emergency Spillways)
Top of Dam Elevation 458.0 Feet
Test Flood Elevation 456.24 Feet

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
**********
    1                 A1       DAM SAFETY ANALYSIS - JOB 80-108/87   ERJ
    2                 A2       TALCOTT RESERVOIR DAM - WEST HARTFORD, CT.
    3                 A3       01-23-81
    4                 B     75         1         0         0         0         0         0         2         0         0
    5                 PI     .5
    6                 J      1         2         1
    7                 J1    .5      1.0
    8                 K                1                                                  1
    9                 K1       COMPUTATION OF PMF - DEVELOPMENT OF INFLOW HYDROGRAPH
   10                 M      1         1      1.61                 1.61                                        1
   11                 P                21.5      110       124       133       142
   12                 T                                                                                  .1
   13                 W     1.71    0.625
   14                 X      2.9    *0.85       2.0
   15                 K      1         1                                                  1
   16                 K1       ROUTING INFLOW HYDROGRAPH THRU POND - OVERTOPPING ANALYSIS
   17                 Y                                            1         1
   18                 Y1     1                                                    -435.0
   19                 $S     0       0.1     26.18     87.18    158.96    381.96    650.96    988.96      1380
   20                 $E   431       439       436       438       440       445       450       455       460
   21                 $$ 452.5       130       2.7       1.5    431.85       .67       4.9        .5
   22                 $D   450       2.7       1.5      4255
   23                 K     99
```

```
**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
  LAST MODIFICATION  26 FEB 79
**********

RUN  DATE= 82/04/01.
     TIME= 14.53.36.
```

DAM SAFETY ANALYSIS - JOB 80-100/07 ERJ
TALCOTT RESERVOIR DAM - WEST HARTFORD, CT.
01-23-81

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
75	1	0	0	0	0	0	2	0	0
			JOPER	NWT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 2 LRTIO= 1
RTIOS= .50 1.00

********** ********** ********** ********** **********

D-4

SUB-AREA RUNOFF COMPUTATION

COMPUTATION OF PMF - DEVELOPMENT OF INFLOW HYDROGRAPH

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	1.61	0.00	1.61	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	21.50	110.00	124.00	133.00	142.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	0.00	.10	0.00	0.00

UNIT HYDROGRAPH DATA
TP= 1.71 CP= .63 NTA= 0

RECESSION DATA
STRTQ= 2.90 QRCSN= -.05 RTIOR= 2.00

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.94 AND R= 1.37 INTERVALS

UNIT HYDROGRAPH 9 END-OF-PERIOD ORDINATES, LAG= 1.70 HOURS, CP= .62 VOL= 1.00

145.	345.	293.	136.	63.	29.	14.	6.	3.

0

END-OF-PERIOD FLOW

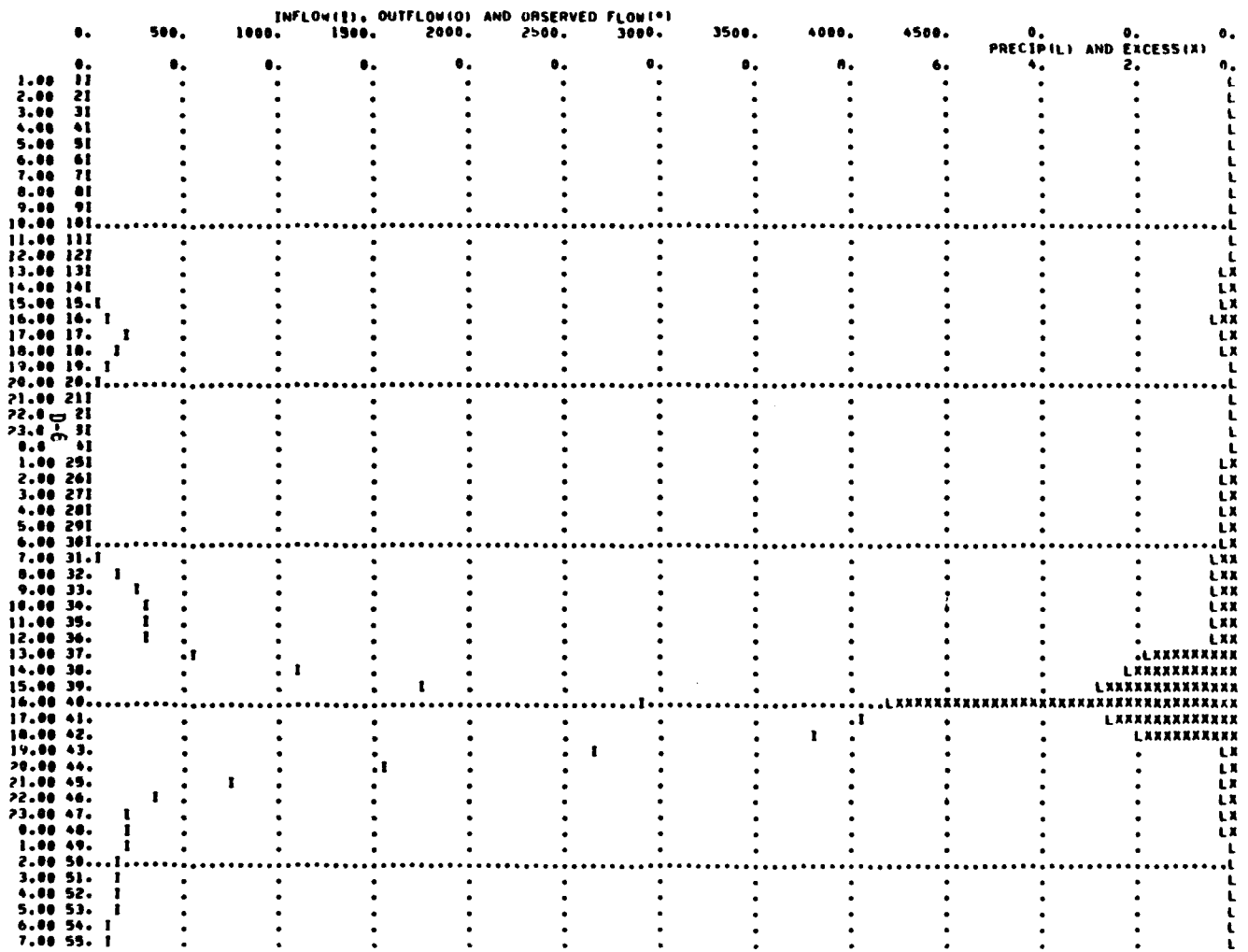
MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q

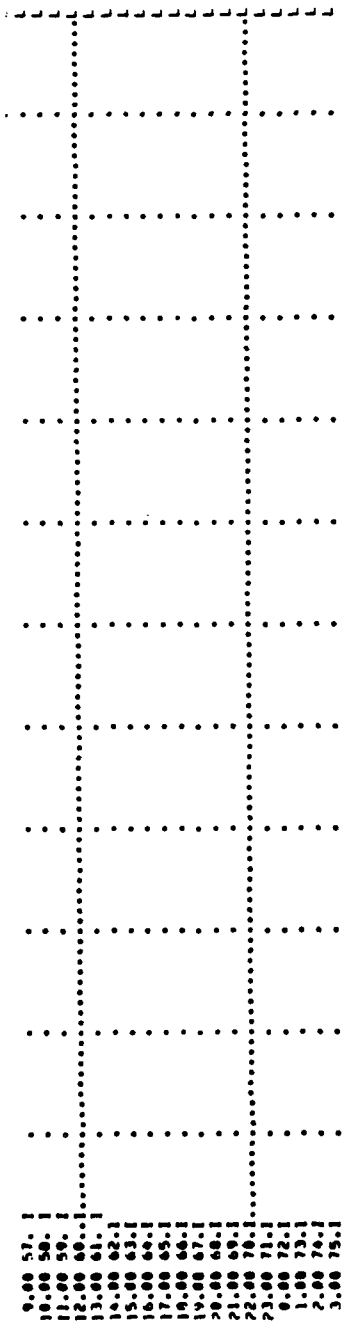
1.01	2.00	2	.01	0.00	.01	3.	1.02	15.00	39	2.84	2.74	.10	1749.
1.01	3.00	3	.01	0.00	.01	2.	1.02	16.00	40	7.19	7.09	.10	2892.
1.01	4.00	4	.01	0.00	.01	2.	1.02	17.00	41	2.65	2.55	.10	4047.
1.01	5.00	5	.01	0.00	.01	2.	1.02	18.00	42	2.08	1.98	.10	3817.
1.01	6.00	6	.01	0.00	.01	2.	1.02	19.00	43	.15	.05	.10	2670.
1.01	7.00	7	.03	0.00	.03	2.	1.02	20.00	44	.15	.05	.10	1526.
1.01	8.00	8	.03	0.00	.03	2.	1.02	21.00	45	.15	.05	.10	739.
1.01	9.00	9	.03	0.00	.03	2.	1.02	22.00	46	.15	.05	.10	372.
1.01	10.00	10	.03	0.00	.03	1.	1.02	23.00	47	.15	.05	.10	202.
1.01	11.00	11	.03	0.00	.03	1.	1.03	0.00	48	.15	.05	.10	189.
1.01	12.00	12	.03	0.00	.03	1.	1.03	1.00	49	0.00	0.00	0.00	176.
1.01	13.00	13	.13	.03	.10	5.	1.03	2.00	50	0.00	0.00	0.00	164.
1.01	14.00	14	.15	.05	.10	19.	1.03	3.00	51	0.00	0.00	0.00	153.
1.01	15.00	15	.19	.09	.10	41.	1.03	4.00	52	0.00	0.00	0.00	143.
1.01	16.00	16	.49	.39	.10	108.	1.03	5.00	53	0.00	0.00	0.00	133.
1.01	17.00	17	.18	.08	.10	102.	1.03	6.00	54	0.00	0.00	0.00	124.
1.01	18.00	18	.14	.04	.10	164.	1.03	7.00	55	0.00	0.00	0.00	116.
1.01	19.00	19	.01	0.00	.01	99.	1.03	8.00	56	0.00	0.00	0.00	108.
1.01	20.00	20	.01	0.00	.01	52.	1.03	9.00	57	0.00	0.00	0.00	101.
1.01	21.00	21	.01	0.00	.01	24.	1.03	10.00	58	0.00	0.00	0.00	94.
1.01	22.00	22	.01	0.00	.01	12.	1.03	11.00	59	0.00	0.00	0.00	88.
1.01	23.00	23	.01	0.00	.01	9.	1.03	12.00	60	0.00	0.00	0.00	82.
1.02	0.00	24	.01	0.00	.01	8.	1.03	13.00	61	0.00	0.00	0.00	77.
1.02	1.00	25	.10	.00	.10	8.	1.03	14.00	62	0.00	0.00	0.00	71.
1.02	2.00	26	.10	.00	.10	7.	1.03	15.00	63	0.00	0.00	0.00	67.
1.02	3.00	27	.10	.00	.10	7.	1.03	16.00	64	0.00	0.00	0.00	62.
1.02	4.00	28	.10	.00	.10	6.	1.03	17.00	65	0.00	0.00	0.00	58.
1.02	5.00	29	.10	.00	.10	6.	1.03	18.00	66	0.00	0.00	0.00	54.
1.02	6.00	30	.10	.00	.10	5.	1.03	19.00	67	0.00	0.00	0.00	51.
1.02	7.00	31	.40	.30	.10	47.	1.03	20.00	68	0.00	0.00	0.00	47.
1.02	8.00	32	.40	.30	.10	150.	1.03	21.00	69	0.00	0.00	0.00	44.
1.02	9.00	33	.40	.30	.10	237.	1.03	22.00	70	0.00	0.00	0.00	41.
1.02	10.00	34	.40	.30	.10	278.	1.03	23.00	71	0.00	0.00	0.00	38.
1.02	11.00	35	.40	.30	.10	297.	1.04	0.00	72	0.00	0.00	0.00	36.
1.02	12.00	36	.40	.30	.10	306.	1.04	1.00	73	0.00	0.00	0.00	33.
1.02	13.00	37	1.89	1.79	.10	526.	1.04	2.00	74	0.00	0.00	0.00	31.
							1.04	3.00	75	0.00	0.00	0.00	29.
									SUM	24.42	21.16	3.27	24148.
										(620.)(	537.)(	83.)(	683.80)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4047.	2748.	920.	335.	24135.
CMS	115.	78.	26.	9.	683.
INCHES		15.88	21.27	23.24	23.24
MM		403.27	540.19	590.20	590.32
AC-FT		1363.	1825.	1994.	1995.
THOUS CU M		1681.	2251.	2460.	2460.

OVF

STATION 1





DYN

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	3.	9.	21.	54.	91.	82.	49.	26.
12.	6.	4.	4.	4.	4.	3.	3.	3.	3.
23.	75.	119.	139.	148.	153.	263.	549.	875.	1446.
2024.	1908.	1335.	763.	378.	186.	101.	94.	88.	82.
77.	71.	67.	62.	58.	54.	51.	47.	44.	41.
38.	36.	33.	31.	29.	27.	25.	24.	22.	21.
19.	18.	17.	16.	15.					

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2024.	1374.	460.	168.	12067.
CMS	57.	39.	13.	5.	342.
INCHES		7.94	10.63	11.62	11.62
MM		201.63	270.09	295.10	295.16
AC-FT		681.	913.	997.	997.
THOUS CU M		840.	1126.	1230.	1230.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

3.	3.	2.	2.	2.	2.	2.	2.	2.	1.
1.	1.	5.	19.	41.	108.	182.	164.	99.	52.
24.	12.	9.	8.	8.	7.	7.	6.	6.	5.
47.	150.	237.	278.	297.	306.	526.	1098.	1749.	2892.
4047.	3817.	2670.	1526.	739.	372.	202.	189.	176.	164.
153.	143.	133.	124.	116.	108.	101.	94.	88.	82.
77.	71.	67.	62.	58.	54.	51.	47.	44.	41.
38.	36.	33.	31.	29.					

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4047.	2748.	920.	335.	24135.
CMS	115.	78.	26.	9.	683.
INCHES		15.88	21.27	23.24	23.24
MM		403.27	540.19	590.20	590.32
AC-FT		1363.	1825.	1994.	1995.
THOUS CU M		1681.	2251.	2460.	2460.

D-8

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTING INFLOW HYDROGRAPH THRU POND - OVERTOPPING ANALYSIS

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	*0.000*	*0.000*	*0.000*	-435.	0

CAPACITY=	0.	0.	26.	87.	159.	382.	660.	989.	1380.
ELEVATION=	431.	435.	436.	438.	440.	445.	450.	455.	460.

492.5 130.0 2.7 1.5 431.9 .7 4.9 .5

DAM DATA

TOPEL	COQD	EXPD	DAMWID
458.0	2.7	1.5	4255.

STATION 1, PLAN 1, RATIO 1

ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 2 SUB-STEP 1 TIME 2.00 HR
ESTIMATED W.S. ELEV 4.393E+02 4.316E+02 CONTINUITY BALANCE 2.525E+02 -2.257E+00
ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 11 SUB-STEP 1 TIME 11.00 HR
ESTIMATED W.S. ELEV 4.318E+02 4.319E+02 CONTINUITY BALANCE -1.406E+00 3.848E+00
ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 13 SUB-STEP 1 TIME 13.00 HR
ESTIMATED W.S. ELEV 4.304E+02 4.316E+02 CONTINUITY BALANCE 9.703E+02 -2.909E+00
ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 25 SUB-STEP 1 TIME 25.00 HR
ESTIMATED W.S. ELEV 4.319E+02 4.316E+02 CONTINUITY BALANCE 8.196E+00 -2.041E-01
ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 29 SUB-STEP 1 TIME 29.00 HR
ESTIMATED W.S. ELEV 4.319E+02 4.317E+02 CONTINUITY BALANCE 5.196E+00 -1.353E-01
ITERATIVE SOLUTION DID NOT CONVERGE, PERIOD 32 SUB-STEP 1 TIME 32.00 HR
ESTIMATED W.S. ELEV 4.340E+02 4.380E+02 CONTINUITY BALANCE -3.823E+01 2.086E+03

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	2.	0.	2.	0.	2.	0.	1.	0.
5.	0.	0.	12.	18.	47.	47.	48.	49.	48.
48.	47.	0.	0.	0.	7.	0.	6.	0.	5.
21.	65.	66.	66.	67.	68.	70.	74.	79.	88.
98.	108.	114.	118.	119.	120.	131.	125.	121.	120.
119.	119.	119.	119.	119.	119.	118.	118.	118.	117.
117.	117.	117.	116.	116.	116.	115.	115.	115.	114.
114.	113.	113.	113.	112.					

STORAGE

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	3.	6.	7.	6.
4.	1.	0.	0.	0.	0.	0.	0.	0.	0.
0.	87.	89.	95.	101.	108.	119.	147.	199.	288.
424.	578.	703.	788.	817.	830.	831.	828.	826.	823.
820.	816.	812.	807.	802.	797.	792.	786.	780.	774.
768.	761.	754.	747.	740.	733.	726.	718.	710.	703.
695.	687.	679.	671.	663.					

STAGE

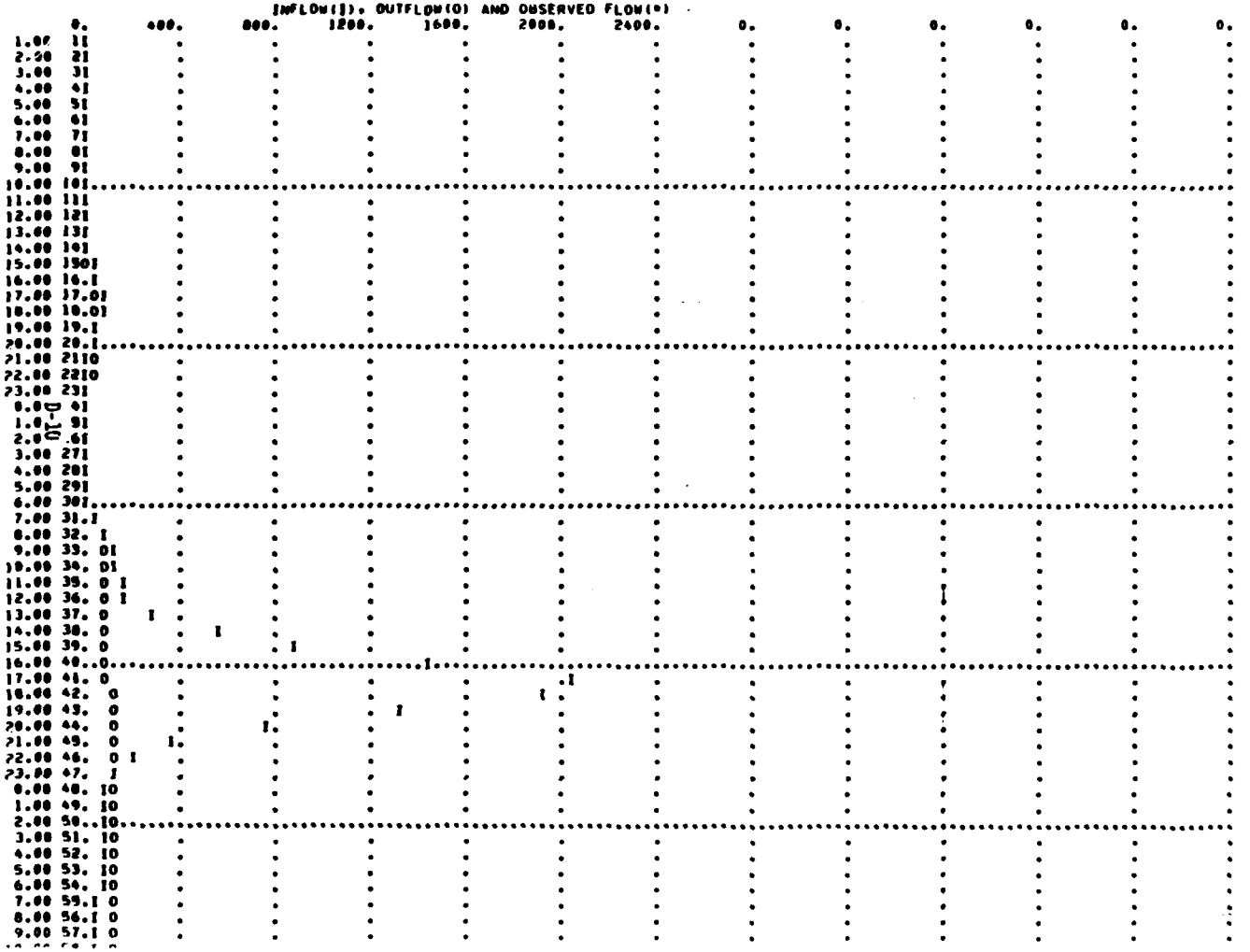
431.0	431.6	431.9	431.8	431.9	431.8	431.9	431.4	431.9	431.8
431.9	431.0	431.6	432.8	432.3	435.0	435.1	435.2	435.3	435.2
435.1	435.0	431.0	431.9	431.6	431.9	431.2	431.9	431.7	431.9
432.5	438.0	438.1	438.2	438.4	438.6	438.9	439.7	440.9	442.9
445.0	448.5	450.7	451.8	452.4	452.6	452.6	452.6	452.5	452.5
452.4	452.4	452.3	452.2	452.2	452.1	452.0	451.9	451.8	451.7
451.6	451.5	451.4	451.3	451.2	451.1	451.0	450.9	450.8	450.7
450.5	450.4	450.3	450.2	450.0					

PEAK OUTFLOW IS 131. AT TIME 47.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	131.	124.	119.	71.	5099.
CMS	4.	4.	3.	2.	144.
INCHES		.72	2.75	4.91	4.91
MM		18.19	69.93	124.70	124.73
AC-FT		61.	236.	421.	421.
THOUS CU M		76.	291.	520.	520.

OVF

STATION 1



OVN

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                                                STATION      1, PLAN 1, RATIO 2
ITERATIVE SOLUTION DID NOT CONVERGE,    PERIOD   2   SUB-STEP  1    TIME  2.00 HR
ESTIMATED W.S. ELEV   4.396E+02   4.318E+02          CONTINUITY BALANCE   3.607E+03   -4.759E+00
ITERATIVE SOLUTION DID NOT CONVERGE,    PERIOD   5   SUB-STEP  1    TIME  5.00 HR
ESTIMATED W.S. ELEV   4.319E+02   4.319E+02          CONTINUITY BALANCE  -7.595E-01   -1.577E-01
ITERATIVE SOLUTION DID NOT CONVERGE,    PERIOD   6   SUB-STEP  1    TIME  6.00 HR
ESTIMATED W.S. ELEV   4.321E+02   4.317E+02          CONTINUITY BALANCE   1.245E+01   -1.963E-01
ITERATIVE SOLUTION DID NOT CONVERGE,    PERIOD   9   SUB-STEP  1    TIME  9.00 HR
ESTIMATED W.S. ELEV   4.386E+02   4.317E+02          CONTINUITY BALANCE   1.151E+03   -2.989E+00
ITERATIVE SOLUTION DID NOT CONVERGE,    PERIOD  31   SUB-STEP  1    TIME 31.00 HR
ESTIMATED W.S. ELEV   4.340E+02   4.340E+02          CONTINUITY BALANCE  -4.563E+00   -4.478E+00
```

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	5.	0.	4.	0.	4.	0.	0.	3.
0.	3.	4.	20.	39.	47.	50.	52.	54.	54.
54.	53.	52.	51.	51.	50.	49.	48.	47.	0.
46.	48.	51.	55.	59.	63.	67.	76.	86.	100.
116.	1843.	2666.	2275.	1537.	902.	553.	376.	291.	243.
212.	191.	174.	161.	150.	141.	133.	127.	122.	120.
119.	119.	119.	119.	119.	118.	118.	118.	118.	117.
117.	117.	117.	116.	116.					

STORAGE

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	3.	11.	21.	27.	29.
28.	25.	21.	18.	14.	10.	7.	4.	0.	0.
0.	4.	16.	33.	52.	72.	101.	162.	273.	457.
735.	992.	1086.	1055.	991.	930.	900.	878.	865.	857.
851.	847.	843.	840.	837.	835.	832.	829.	827.	824.
820.	817.	812.	808.	803.	798.	792.	787.	781.	775.
768.	762.	755.	748.	741.					

STAGE

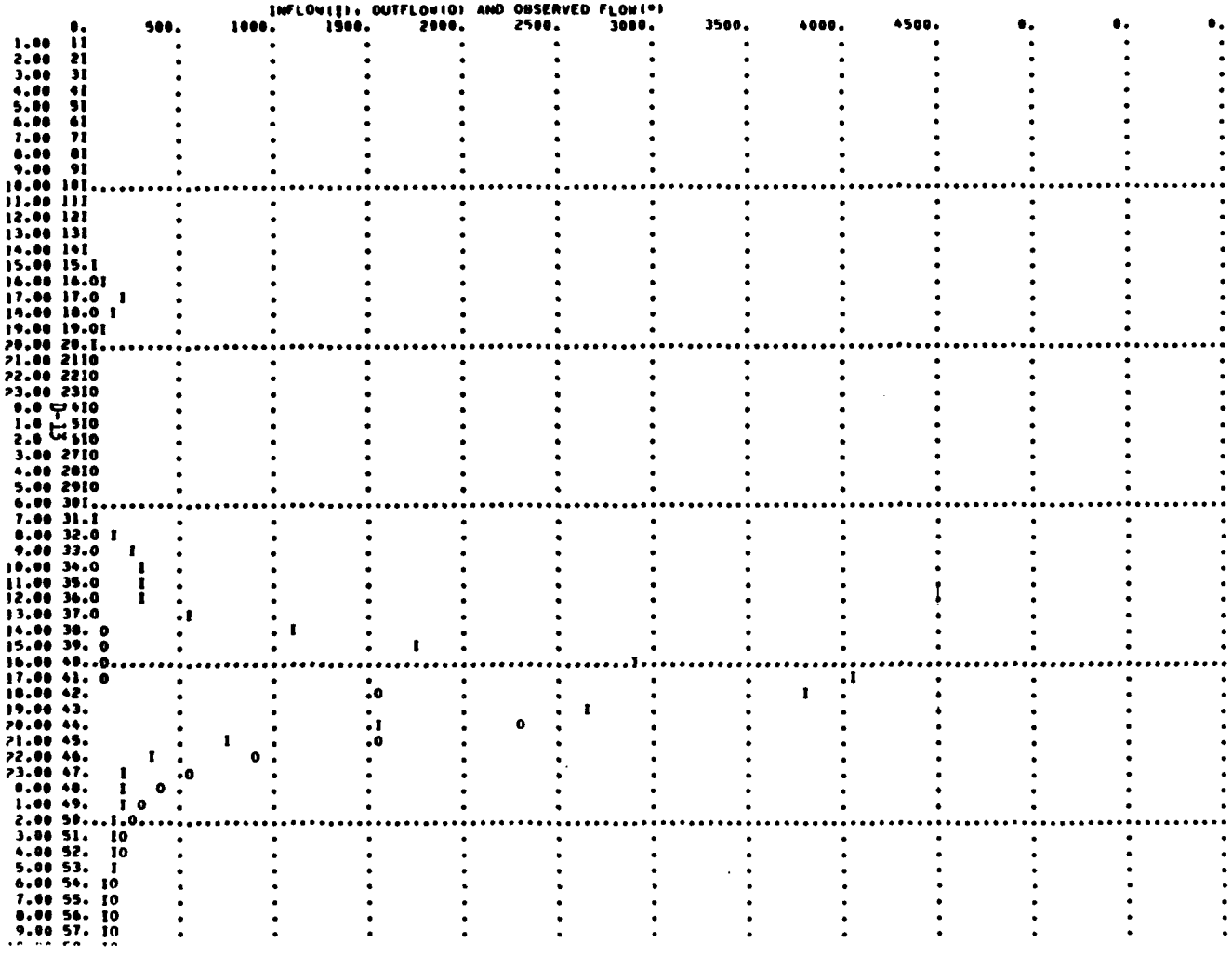
431.8	481.8	431.9	431.5	431.9	431.7	431.9	431.3	431.7	431.9
431.7	481.9	431.9	432.4	434.0	435.1	435.4	435.8	436.0	436.1
436.0	485.9	435.8	435.7	435.5	435.4	435.3	435.1	435.0	431.0
434.8	485.2	435.6	436.2	436.9	437.5	438.4	440.1	442.6	446.4
451.1	485.0	456.2	455.8	455.0	454.2	453.6	453.3	453.1	453.0
452.9	482.8	492.8	452.7	452.7	452.7	452.6	452.6	452.5	452.5
482.4	482.4	492.3	452.2	452.2	452.1	452.0	451.9	451.8	451.7
451.6	451.5	451.4	451.3	451.2					

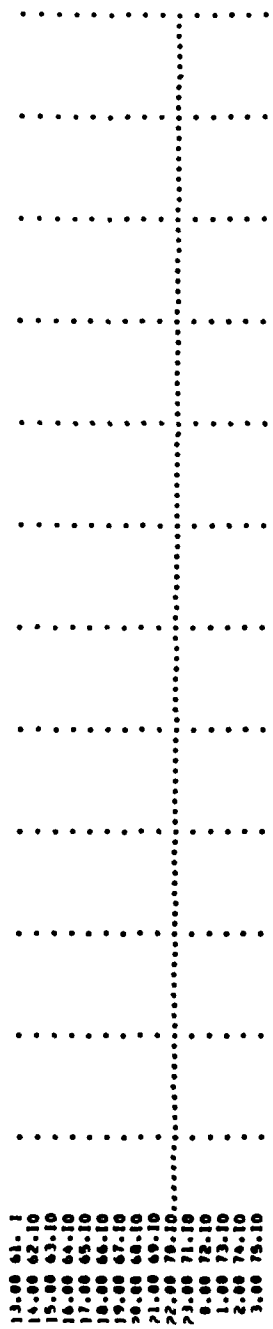
PEAK OUTFLOW IS 2666. AT TIME 43.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2666.	1543.	521.	211.	15186.
CMS	75.	44.	15.	6.	430.
INCHES		0.91	12.05	14.62	14.62
MM		226.41	306.02	371.38	371.43
AC-FT		765.	1034.	1255.	1255.
THOUS CU M		944.	1275.	1548.	1548.

OWF

STATION 1




61. 1
61.10
62.10
63.10
64.10
65.10
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68.10
69.10
70.10
71.10
72.10
73.10
74.10
75.10
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
0.00
1.00
2.00
3.00

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 .50	 RATIO 2 1.00
HYDROGRAPH AT	1	1.61	1	2024.	4047.
		(4.17)		(57.30)(	114.61)(
ROUTED TO	1	1.61	1	131.	2666.
		(4.17)		(3.70)(	75.50)(

SUMMARY OF DAM SAFETY ANALYSIS

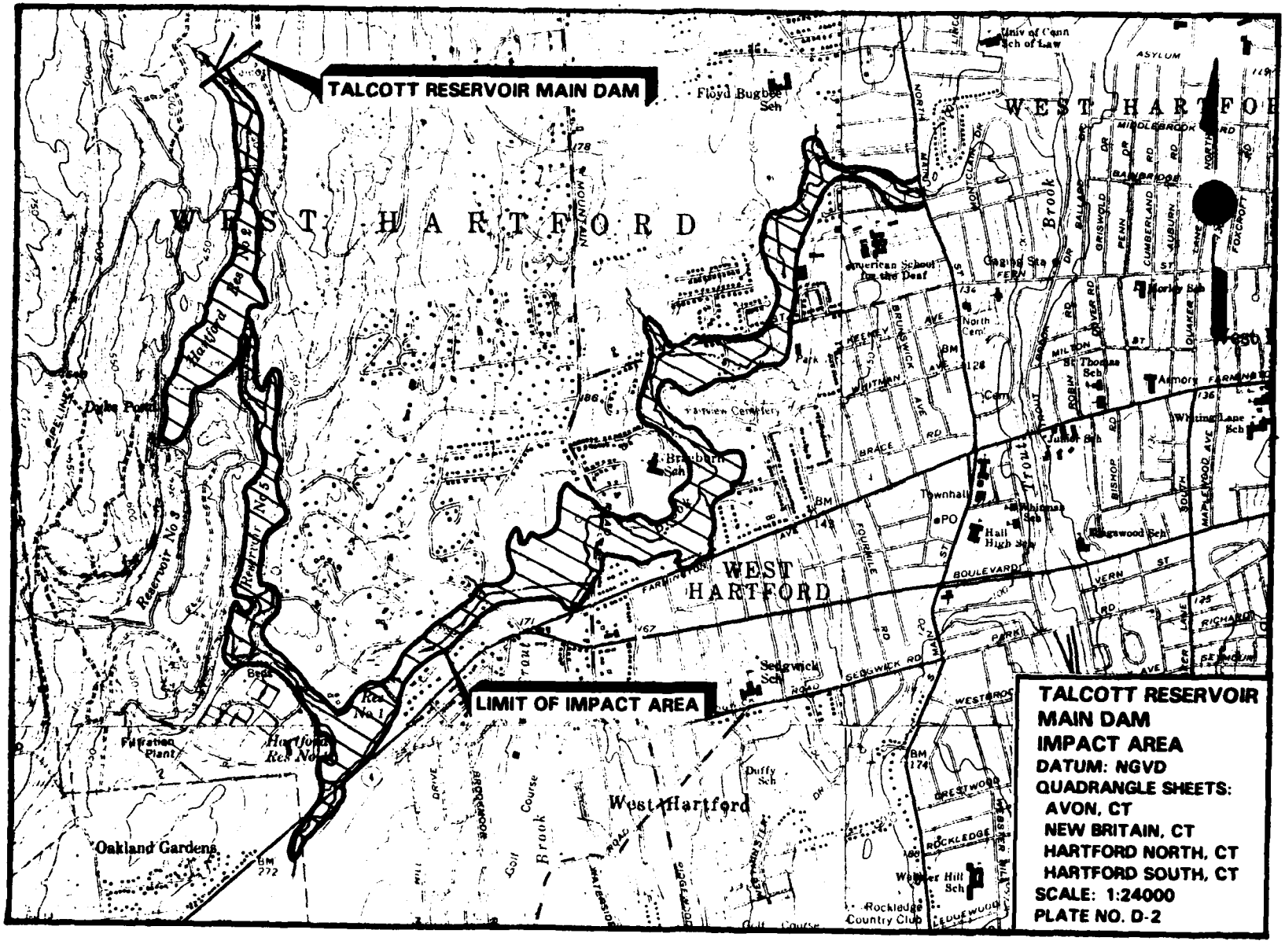
PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	435.00	452.50	458.00
STORAGE	0.	824.	1224.
OUTFLOW	47.	120.	4662.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.50	452.60	0.00	831.	131.	0.00	47.00	0.00
1.00	456.24	0.00	1086.	2666.	0.00	43.00	0.00

TALCOTT RESERVOIR

MAIN DAM


TALCOTT RESERVOIR MAIN DAM
LIMIT OF IMPACT AREA
WEST HARTFORD
West Hartford
Oakland Gardens
Rockledge Country Club
Reservoir No. 5
Reservoir No. 6
Reservoir No. 7
Reservoir No. 8
Trout Brook
Golf Course Brook
Floyd Bugbee Sch
American School for the Deaf
Duffy Sch
Sedgwick Sch
Hall High Sch
Weaver Hill Sch
Bishop Sch
Ridgewood Sch
Whiting Lane Sch
Armory
Townhall
PO
Fairview Cemetery
North Cem
Park Cem
Filtration Plant
Dam
Pipeline
BOULEVARD
FARMINGTON AVE
BRACE RD
SEDGWICK ROAD
ROCKLEDGE
WESTBROOK
ASYLUM
MIDDLEBROOK RD
NORTH MAIN ST
MONTCLAIR DR
BALLARD RD
GRISWOLD DR
FENN RD
CUMBERLAND RD
AUBURN RD
SANDRIDGE RD
FOXCROFT DR
QUAKER LANE
FARMINGTON
MAPLEWOOD AVE
VERN ST
RICHARD
BRUNSWICK AVE
WHITMAN RD
MILTON RD
ROBIN RD
TROUT BROOK DR
MOUNTAIN RD
NEW LONDON TPKE
BM 272
BM 174
BM 128
BM 148
BM 171
BM 167
BM 186
BM 178
TALCOTT RESERVOIR
MAIN DAM
IMPACT AREA
DATUM: NGVD
QUADRANGLE SHEETS:
AVON, CT
NEW BRITAIN, CT
HARTFORD NORTH, CT
HARTFORD SOUTH, CT
SCALE: 1:24000
PLATE NO. D-2

Talcott Reservoir - Main Dam

Dam Failure Analysis

1. Failure discharge with pool at Em.Spillway (elev. 452.5) = 28000 CFS
2. Depth of water in reservoir at time of failure = 24.5 ft.
3. Maximum depth of flow downstream of dam = 24± ft.
4. Water surface elevation just downstream of dam at time of failure) = 452±

The failure discharge of 28000 CFS will enter and flow downstream 29000 feet until the brook crosses North Main Street. Valley storage in this 29000 feet length of brook is significant in reducing the discharge. Also due to roughness characteristics, obstructions and frictional losses, it is very likely that the unsteady dam failure flow will dissipate its wave and kinetic energy and thus convert to steady and uniform flow obeying Manning's formulae 29000 feet downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	24.5	At Dam
1600	397.8	7.8	
7500	323.8	3.8	Hartford Res. No. 5
11800	260.7	2.7	Hartford Res. No. 1
19000	142.2	2.2	
25000	131.7	1.7	
29000	102.±	2±	North Main Street

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Main Dam

Location West Hartford, Connecticut

Drainage Area 1.6 sq. mi., Top of Dam 458.0

Spillway Type Grassed Channel, Crest of Spillway 452.5

Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.

Pool Bottom Near Dam = 428.0

Assumed Side Slopes of Embankments = 2H:1V

Depth of Pool at Dam (Yo) = 24.5 Feet

Mid-Height Elev. 440.2

Length of Dam at Crest = 1325 Feet

Length of Dam at Mid-Height = 350 Feet

40 % of Dam Length at Mid-Height = W_b = 140 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

Peak Failure Discharge

$Q_{pl} = 8/27\ W_b\ \sqrt{g}\ Yo^{3/2}$

$= (1.68)\ (^{W}b)\ (^{Y}o)^{3/2} =$ 28000 cfs

Failure is assumed to coincide with pool elevation at Emergency Spillway Crest

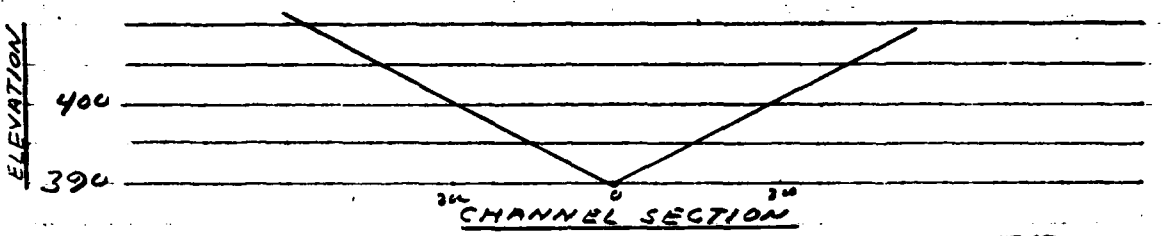
NOTES:

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
CHKD. BY ERJ DATE 2/10/81 JOB NO. 80-100/08
DAM FAILURE ANALYSIS
PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR – MAIN DAM

SECTION 1600' DOWNSTREAM

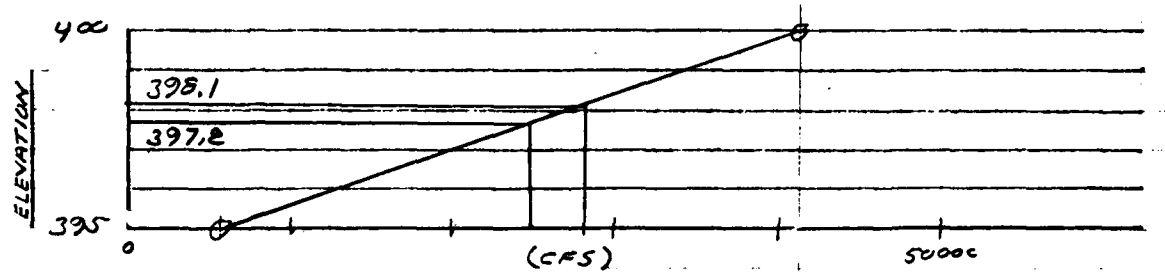
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .02 ft/ft



FULL SPILLWAY Q_s = 75 CFS

Q_{P_1} = 28000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
400	2000	400	5	41000	10
395	500	200	2.5	6000	5



$V_1 = \left(\frac{24.5 + 8.1}{2}\right)\left(\frac{140}{1} + \frac{350+0}{2}\right)\left(\frac{1600}{43560}\right)\left(\frac{1}{2}\right)$ = 94 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 25000 CFS V_{AVG} = 93

$V_2 = \left(\frac{24.5 + 7.8}{2}\right)(5.7)$ = 92 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 25000 CFS ELEV = 397.8

DEPTH = 7.8

FULL SPILLWAY : DEPTH = 1'

INCREASE DUE TO DAM FAILURE = 6.8

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____

CHKD. BY ERJ DATE 2/10/81 JOB NO. 80-100/05

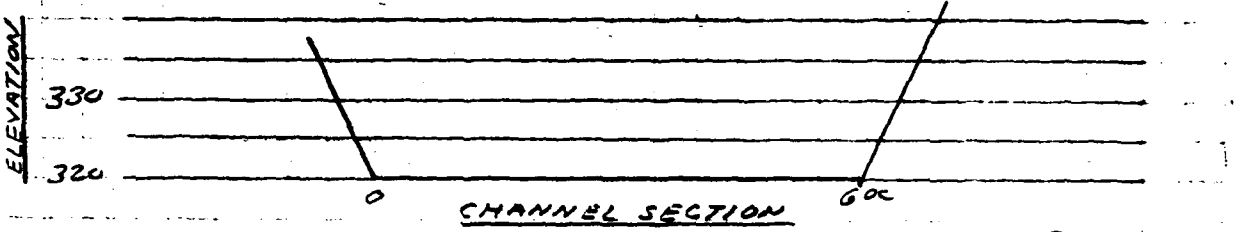
DAM FAILURE ANALYSIS

PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

SECTION 7500' DOWN STREAM - HARTFORD. RES NO 5

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .003 ft/ft

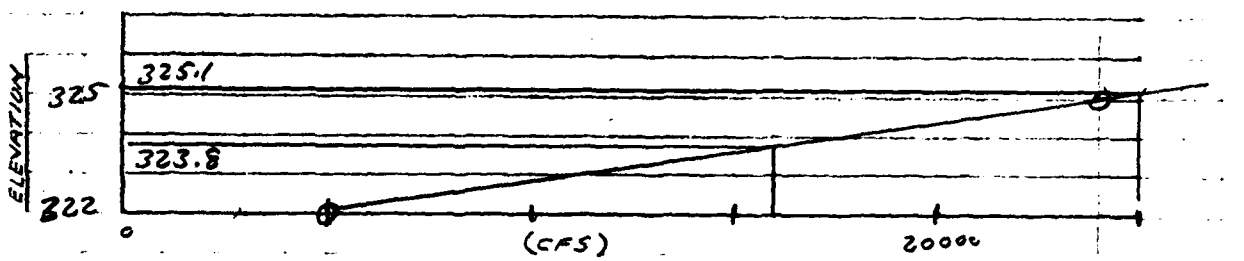


CHANNEL SECTION

FULL SPILLWAY Q_s = 75 CFS

Q_{P_1} = 25000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
322	1200	600	2	5000	2
325	3125	650	4.8	24000	5



$V_1 = \left(\frac{7.8 + 5.1}{2}\right)\left(\frac{1400 + 650}{2} \times 600\right)\left(\frac{5900}{43560}\right)\left(\frac{1}{2}\right)$ = 303 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 16000 CFS V_{AVG} = 288

$V_2 = \left(\frac{7.8 + 3.8}{2}\right)(47)$ = 272 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 16000 CFS ELEV = 323.8

DEPTH = 3.8

FULL SPILLWAY ± DEPTH = 0

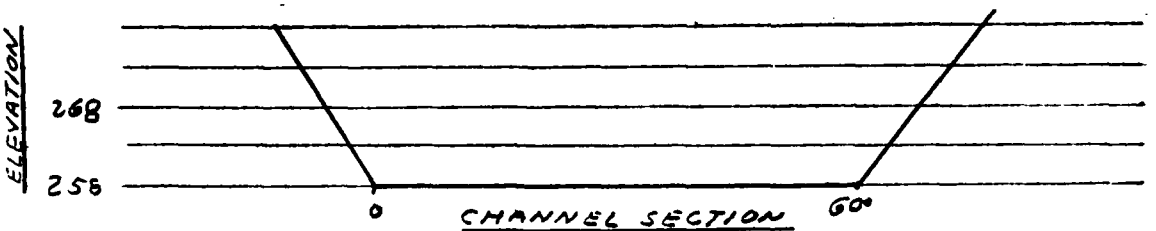
INCREASE DUE TO DAM FAILURE = 3.8

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
CHKD. BY ERJ DATE 2/10/81 JOB NO. 80-100/05
DAM FAILURE ANALYSIS
PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

SECTION 11500' DOWNSTREAM - HARTFORD RBS NO. 1

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .005 ft/ft

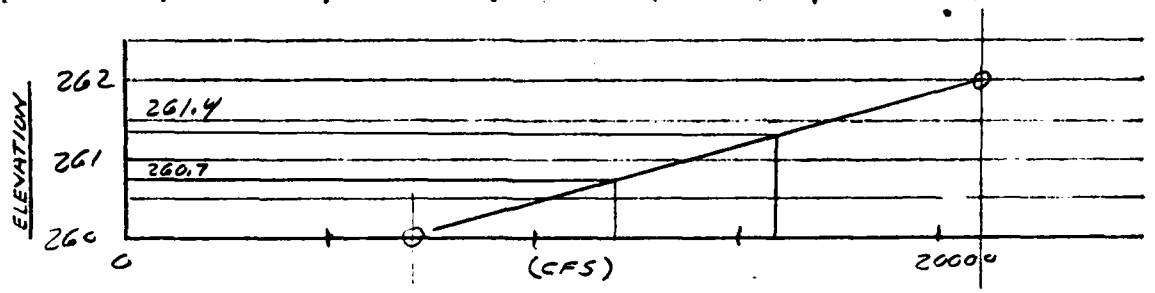


CHANNEL SECTION

FULL SPILLWAY Q_s = 75 CFS

Q_{P_1} = 16000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
260	1200	600	2	7000	2
262	2500	650	3.8	21000	4



$V_1 = \left(\frac{3.8 + 3.4}{2}\right)\left(\frac{650+600}{2} + \frac{650+600}{2}\right)\left(\frac{4300}{43560}\right)\left(\frac{1}{2}\right)$ = 222 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 12000 CFS V_{AVG} = 212

$V_2 = \left(\frac{3.8 + 2.7}{2}\right)(62)$ = 204 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 12000 CFS ELEV = 260.7
DEPTH = 2.7

FULL SPILLWAY : DEPTH = 0

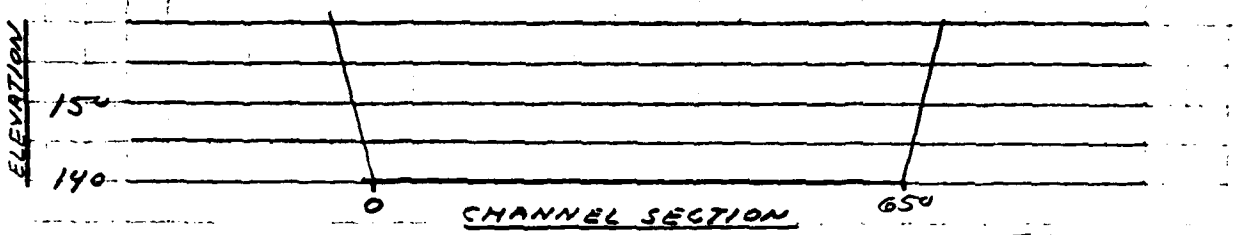
INCREASE DUE TO DAM FAILURE = 2.7

BY JP DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ..... OF .....
CHKD. BY ERJ DATE 2/10/81 JOB NO. 80-100/06
DAM FAILURE ANALYSIS
PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR — MAIN DAM

SECTION 19000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .005 ft/ft

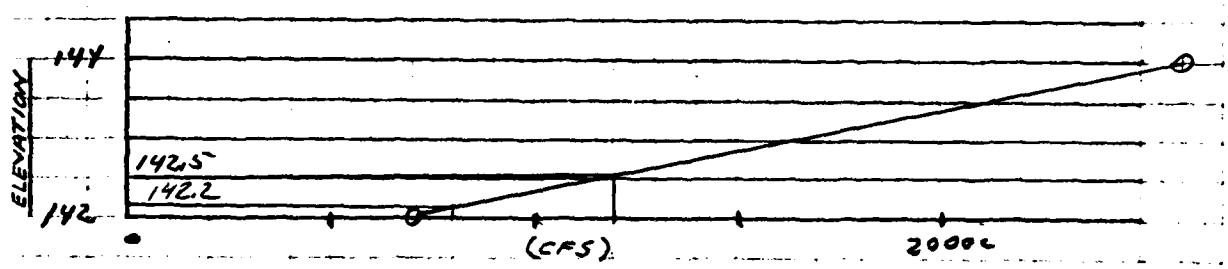


CHANNEL SECTION

FULL SPILLWAY Q_s = 75 CFS

Q_{P_1} = 12000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
142	1300	650	2	7000	2
144	2600	650	4	23000	4



$V_1 = \left(\frac{2.7 + 2.5}{2}\right)\left(\frac{650+600}{2} + \frac{650}{1}\right)\left(\frac{7200}{43560}\right)\left(\frac{1}{2}\right)$ = 274 AC-FT

$Q_{P_2} = Q_{P_1}\left(1 - V_1/S\right)$ = 8000 CFS V_{AVG} = 266

$V_2 = \left(\frac{2.7 + 2.2}{2}\right)(105)$ = 257 AC-FT

$Q_{P_3} = Q_{P_1}\left(1 - V_{AVG}/S\right)$ = 8000 CFS ELEV = 142.2

DEPTH = 2.2

FULL SPILLWAY ∴ DEPTH = —

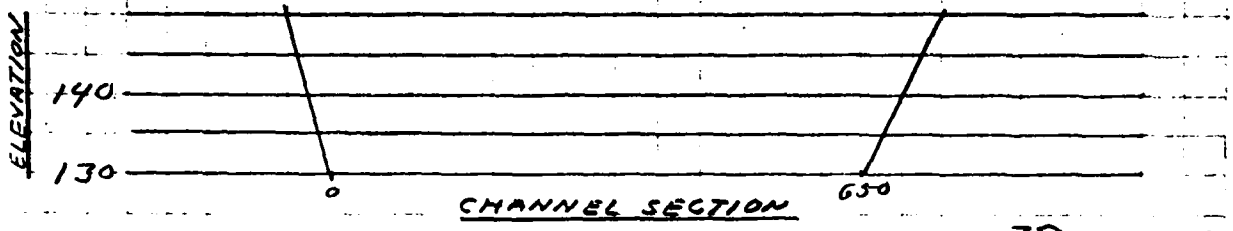
INCREASE DUE TO DAM FAILURE = 2.2

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
CHKD. BY ERT DATE 2/10/81 JOB NO. 80-100/06
DAM FAILURE ANALYSIS
PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

SECTION 25000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .103$ SLOPE $(S_L) = .004$ ft/ft



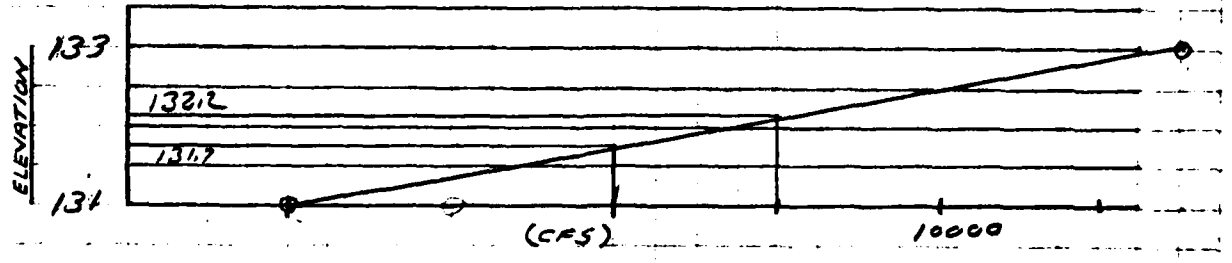
CHANNEL SECTION

$Q_{P_1} = 8000$ CFS

FULL SPILLWAY $Q_s = 75$ CFS

TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
131	650	650	1	2000	1
133	1950	650	3	13000	3



$V_1 = \left(\frac{2.2 + 2.2}{2}\right)\left(\frac{650}{1} + \frac{650}{1}\right)\left(\frac{6000}{43560}\right)\left(\frac{1}{2}\right) = 197$ AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S) = 6000$ CFS $V_{AVG} = 185$

$V_2 = \left(\frac{2.2 + 1.7}{2}\right)(89) = 174$ AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S) = 6000$ CFS ELEV = 131.7

DEPTH = 1.7

FULL SPILLWAY & DEPTH = —

INCREASE DUE TO DAM FAILURE = 1.7

Talcott Reservoir - Main Dam

A. Size Classification

Height of dam = 30.0 ft.; hence Small

Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence intermediate

Adopted size classification: intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives and excessive economic damage at numerous homes and buildings in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

a) Loss of homes 20+;
b) Loss of buildings 10+;
c) Loss of highways or roads 8;
d) Loss of bridges 6;

The failure profile can affect a distance of 29000 feet from the dam.

C. Hazard Potential Classifications

HAZARD	SIZE	TEST FLOOD RANGE
High	Intermediate	PMF

Adopted Test Flood = PMF = 2510 CSM

= 4047 CFS

D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles

Spillway crest elevation = 452.5

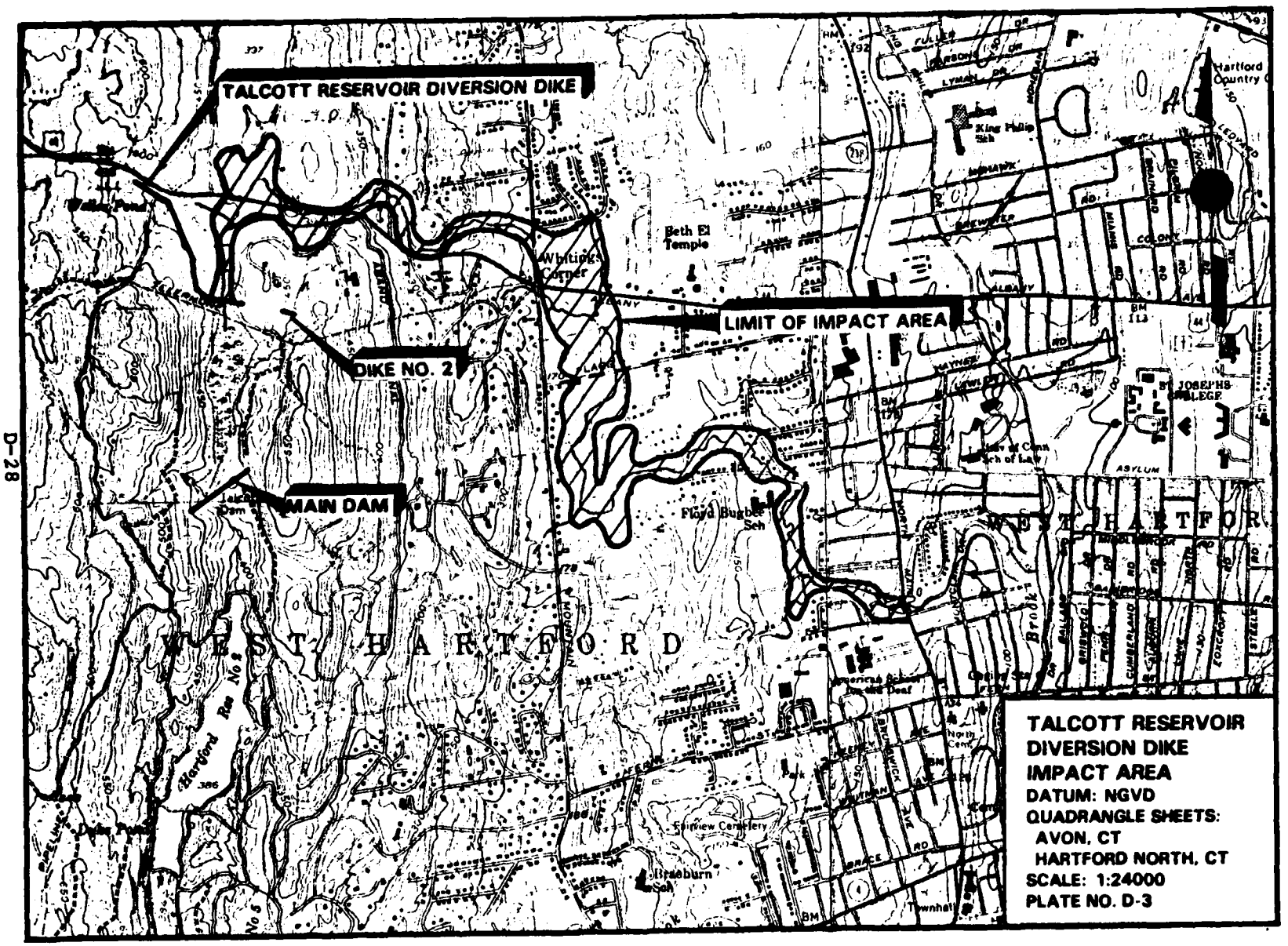
Top of Dam Elevation = 458.0

Maximum spillway discharge

Capacity without overtopping of dam = 5400 (Total Project) CFS
"test flood" inflow discharge = 4047 CFS
"test flood" outflow discharge = 2666 CFS

TALCOTT RESERVOIR

DIVERSION DIKE


TALCOTT RESERVOIR DIVERSION DIKE
LIMIT OF IMPACT AREA
DIKE NO. 2
MAIN DAM
WEST HARTFORD
WEST HARTFOR
Beth El Temple
Whitings Corner
Flora Burbee Sch
Hartford Country
King Philip Sch
JOSEPHS COLLEGE
Brook
Fairview Cemetery
Israelburn Sch
Townhall
TALCOTT RESERVOIR
DIVERSION DIKE
IMPACT AREA
DATUM: NGVD
QUADRANGLE SHEETS:
AVON, CT
HARTFORD NORTH, CT
SCALE: 1:24000
PLATE NO. D-3

Talcott Reservoir - Diversion Dike

Dam Failure Analysis

1. Failure discharge with pool at Em.Spillway (elev. 452.5) = 57000 CFS
2. Depth of water in reservoir at time of failure = 24.5 ft.
3. Maximum depth of flow downstream of dam = 24± ft.
4. Water surface elevation just downstream of dam at time of failure) = 452±

The failure discharge of 57000 CFS will enter and flow downstream 20000 feet until the brook crosses North Main Street. Valley storage in this 20000 feet length of brook is significant in reducing the discharge. Also due to roughness characteristics, obstructions and frictional losses, it is very likely that the unsteady dam failure flow will dissipate its wave and kinetic energy and thus convert to steady and uniform flow obeying Manning's formulae 20000 feet downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	24.5	At Dam
300	441.4	11.4	
5700	230.9	10.9	
9000	164.0	4.0	
11000	160.0	4.0	
15500	143.0	3.0	
20000	103.±	3±	North Main Street

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Diversion Dike

Location West Hartford, Connecticut

Drainage Area 1.6 sq. mi., Top of Dam 458.0

Spillway Type Grassed Channel, Crest of Spillway 452.5

Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.

Pool Bottom Near Dam = 428

Assumed Side Slopes of Embankments = 2H:1V

Depth of Pool at Dam (Yo) = 24.5 Feet

Mid-Height Elev. 440.2

Length of Dam at Crest = 2860 Feet

Length of Dam at Mid-Height = 700 Feet (Portion over outlet)

40 % of Dam Length at Mid-Height = W_b = 280 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

Peak Failure Discharge

$$Q_{pl} = 8/27\ W_b \sqrt{g}\ Yo^{3/2}$$

$$= (1.68)\ (W_b)\ (Y_o)^{3/2} = 57000 \text{ cfs}$$

Failure is assumed to coincide with pool elevation at Emergency Spillway Crest

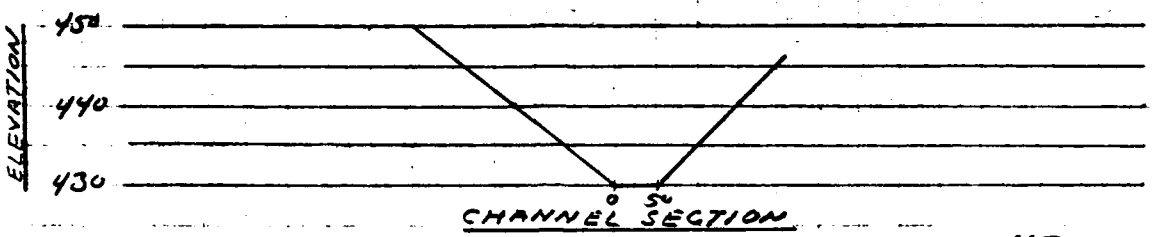
NOTES:

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
CHKD. BY ERJ DATE 2/10/81 JOB NO. 80-100/07
DAM FAILURE ANALYSIS
PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR – DIVERSION DIKE

SECTION 300 FEET DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .029 ft/ft

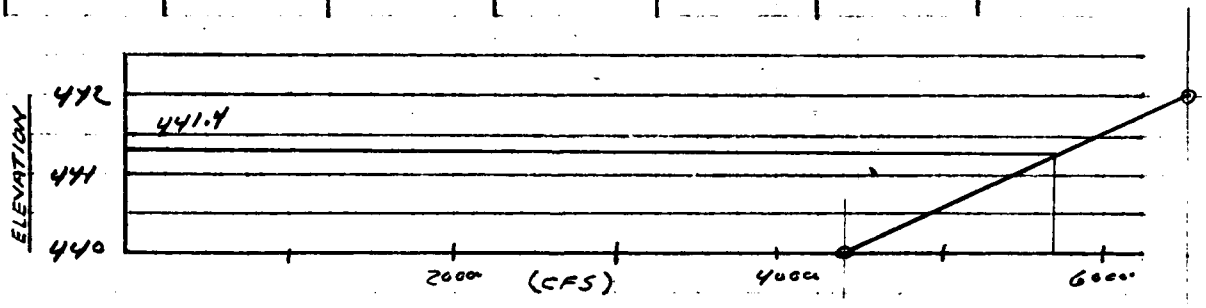


CHANNEL SECTION

FULL SPILLWAY Q_s = 45 CFS

Q_{P_1} = 57000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
440	1600	270	5.9	44000	10
443	2405	320	7.5	78000	13
442	2100	300	7	65000	12



$V_1 = \left(\frac{24.5 + 11.4}{2}\right)\left(\frac{280}{1} + \frac{300 \cdot 50}{2}\right)\left(\frac{300}{43560}\right)\left(\frac{1}{2}\right)$ = 28 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 55000 CFS V_{AVG} = —

$V_2 = \left(\frac{- + -}{2}\right)(1.6)$ = — AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 55000 CFS ELEV = 441.4

DEPTH = 11.4

FULL SPILLWAY : DEPTH = 0

INCREASE DUE TO DAM FAILURE = 11.4

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
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DAM FAILURE ANALYSIS
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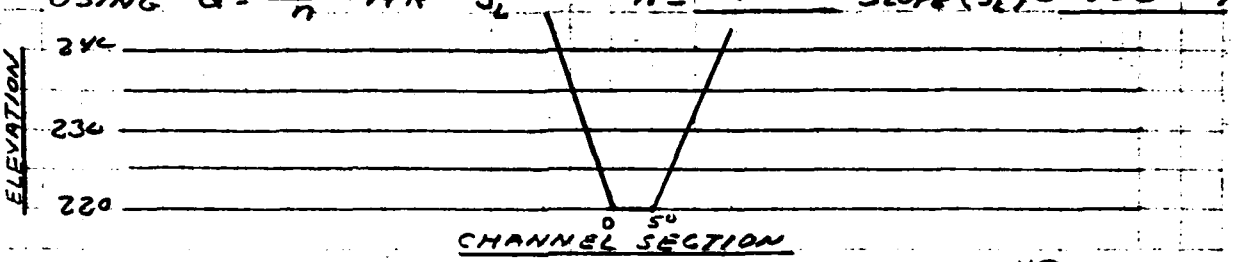
DAM TALCOTT RESERVOIR - DIVERSION DIKE

SECTION 5700 ± DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .05 %

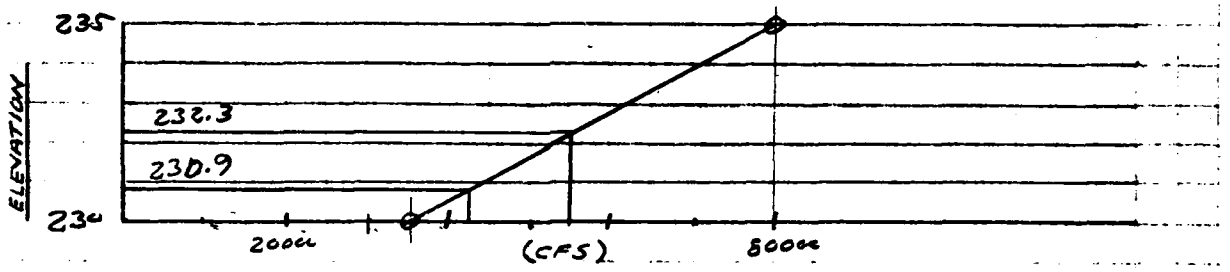


CHANNEL SECTION

FULL SPILLWAY Q_s = 45 CFS

Q_{P_1} = 55000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
230	850	120	7.1	35000	10
235	1575	160	9.8	80000	15



$V_1 = \left(\frac{11.4 + 12.3}{2}\right)\left(\frac{300+50}{2} + \frac{140+50}{2}\right)\left(\frac{5400}{43560}\right)\left(\frac{1}{2}\right)$ = 198 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 42000 CFS V_{AVG} = 192

$V_2 = \left(\frac{11.4 + 10.9}{2}\right)(16.7)$ = 186 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 42000 CFS ELEV = 230.9

DEPTH = 10.9

FULL SPILLWAY : DEPTH = 0

INCREASE DUE TO DAM FAILURE = 10.9

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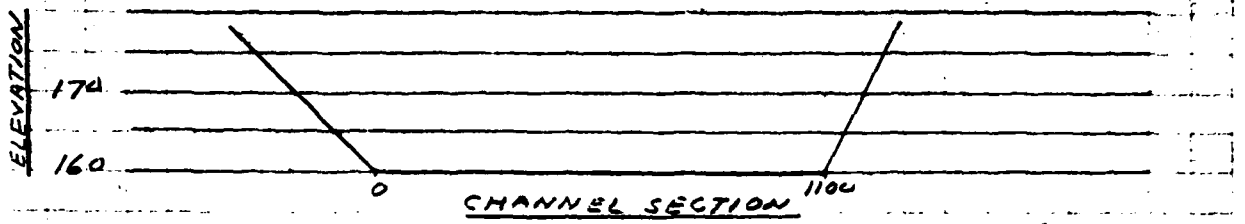
DAM TALCOTT RESERVOIR – DIVERSION DIKE

SECTION 9000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .002 ft/ft



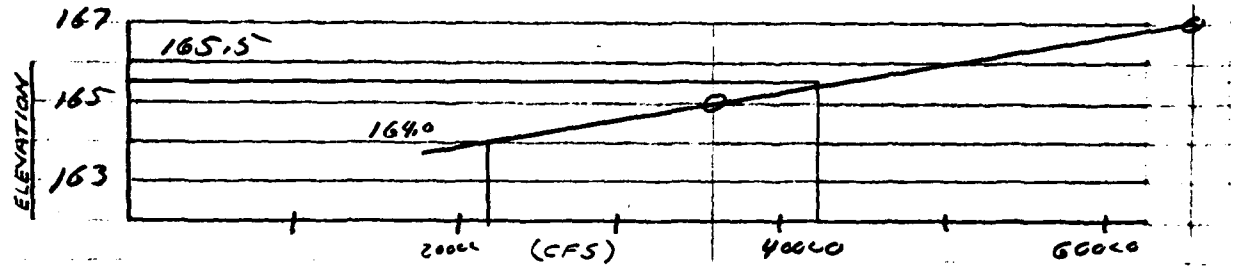
CHANNEL SECTION

Q_{P_1} = 42000 CFS

FULL SPILLWAY Q_s = 45 CFS

TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
165	5675	1250	4.7	36000	5
167	8400	1300	6.5	65000	7



$V_1 = \left(\frac{10.9 + 5.5}{2}\right)\left(\frac{140+50}{2} + \frac{1250+1100}{2}\right)\left(\frac{3300}{43560}\right)\left(\frac{1}{2}\right)$ = 394 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 22000 CFS V_{AVG} = 379

$V_2 = \left(\frac{10.9 + 4.0}{2}\right)(48)$ = 365 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 23000 CFS ELEV = 164.0

DEPTH = 4.0

FULL SPILLWAY : DEPTH = 0

INCREASE DUE TO DAM FAILURE = 4.0

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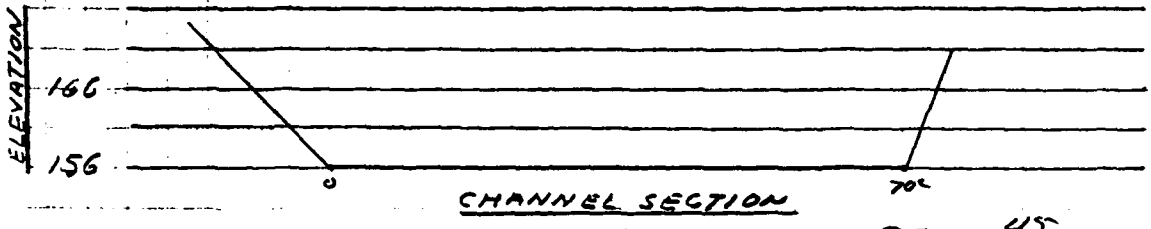
DAM TALCOTT RESERVOIR - DIVERSION DIKE

SECTION 11000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .002 ft/ft

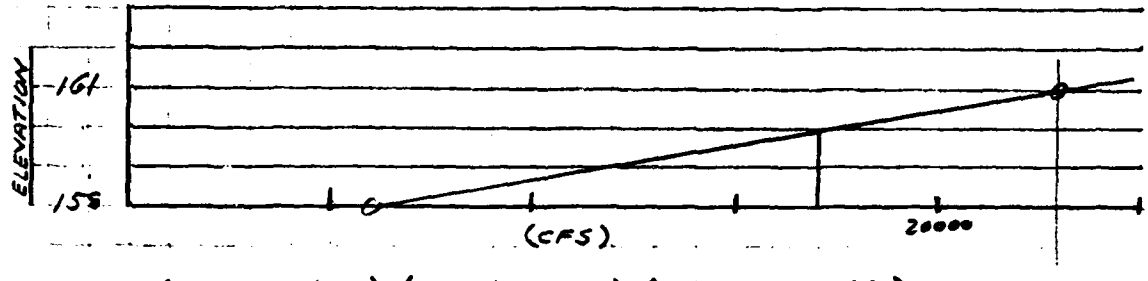


CHANNEL SECTION

FULL SPILLWAY Q_S = 45 CFS

Q_{P_1} = 23000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
156	140	70	2	6000	2
161	3750	80	4.7	23000	5



$V_1 = \left(\frac{4.0 + 5.0}{2}\right)\left(\frac{\text{[illegible]}}{2} + \frac{600+700}{2}\right)\left(\frac{2000}{43560}\right)\left(\frac{1}{2}\right)$ = 200 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 17000 CFS V_{AVG} = 188

$V_2 = \left(\frac{4.4 + 4.0}{2}\right)(44)$ = 176 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 18000 CFS ELEV = 160.0

DEPTH = 4.0

FULL SPILLWAY * DEPTH = —

INCREASE DUE TO DAM FAILURE = 4.0

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
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DAM FAILURE ANALYSIS
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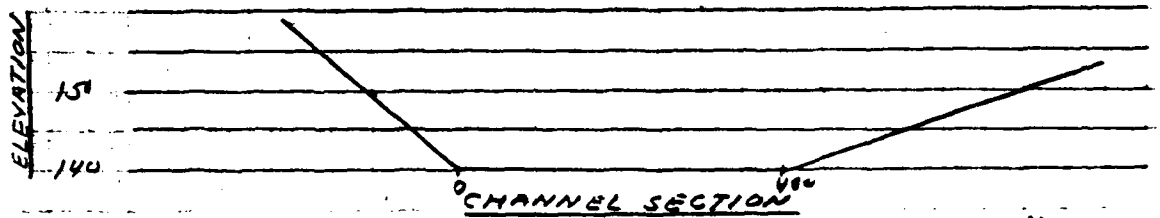
DAM TALCOTT RESERVOIR - DIVERSION DIKE

SECTION 1550' DOWNSTREAM

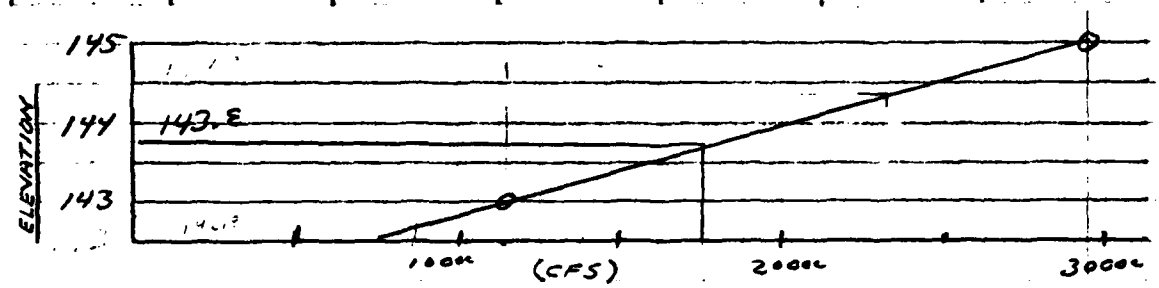
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .103 SLOPE (S_L) = .0086 ft/ft



FULL SPILLWAY $Q_s =$ 45 CFS

$Q_{P_1} =$ 18000 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
145	2500	600	4.2	29000	5
143	1350	500	2.7	12000	3



$V_1 = \left(\frac{4.0 + 3.8}{2}\right)\left(\frac{1250+1100}{2} + \frac{500+0}{2}\right)\left(\frac{4500}{43560}\right)\left(\frac{1}{2}\right) =$ 3.87 AC-FT

$Q_{P_2} = Q_{P_1}\left(1 - V_1/S\right) =$ 11000 CFS $V_{AVG} =$ 311

$V_2 = \left(\frac{4.0 + 3.0}{2}\right)(84) =$ 294 AC-FT

$Q_{P_2} = Q_{P_1}\left(1 - V_{AVG}/S\right) =$ 11600 CFS ELEV = 143.0

DEPTH = 3.0

FULL SPILLWAY ∆ DEPTH = —

INCREASE DUE TO DAM FAILURE = 3.0

Talcott Reservoir - Diversion Dike

A. Size Classification

Height of dam = 30.0 ft.; hence Small

Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence Intermediate

Adopted size classification: Intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives and excessive economic damage at numerous homes and buildings in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest.

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

a) Loss of homes 20+;
b) Loss of buildings 10+;
c) Loss of highways or roads 7;
d) Loss of bridges 5;

The failure profile can affect a distance of 20000 feet from the dam.

C. Hazard Potential Classifications

HAZARD	SIZE	TEST FLOOD RANGE
High	Intermediate	PMF

Adopted Test Flood = PMF = 2510 CSM

= 4047 CFS

D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles

Spillway crest elevation = 452.5

Top of Dam Elevation = 458.0

Maximum spillway discharge

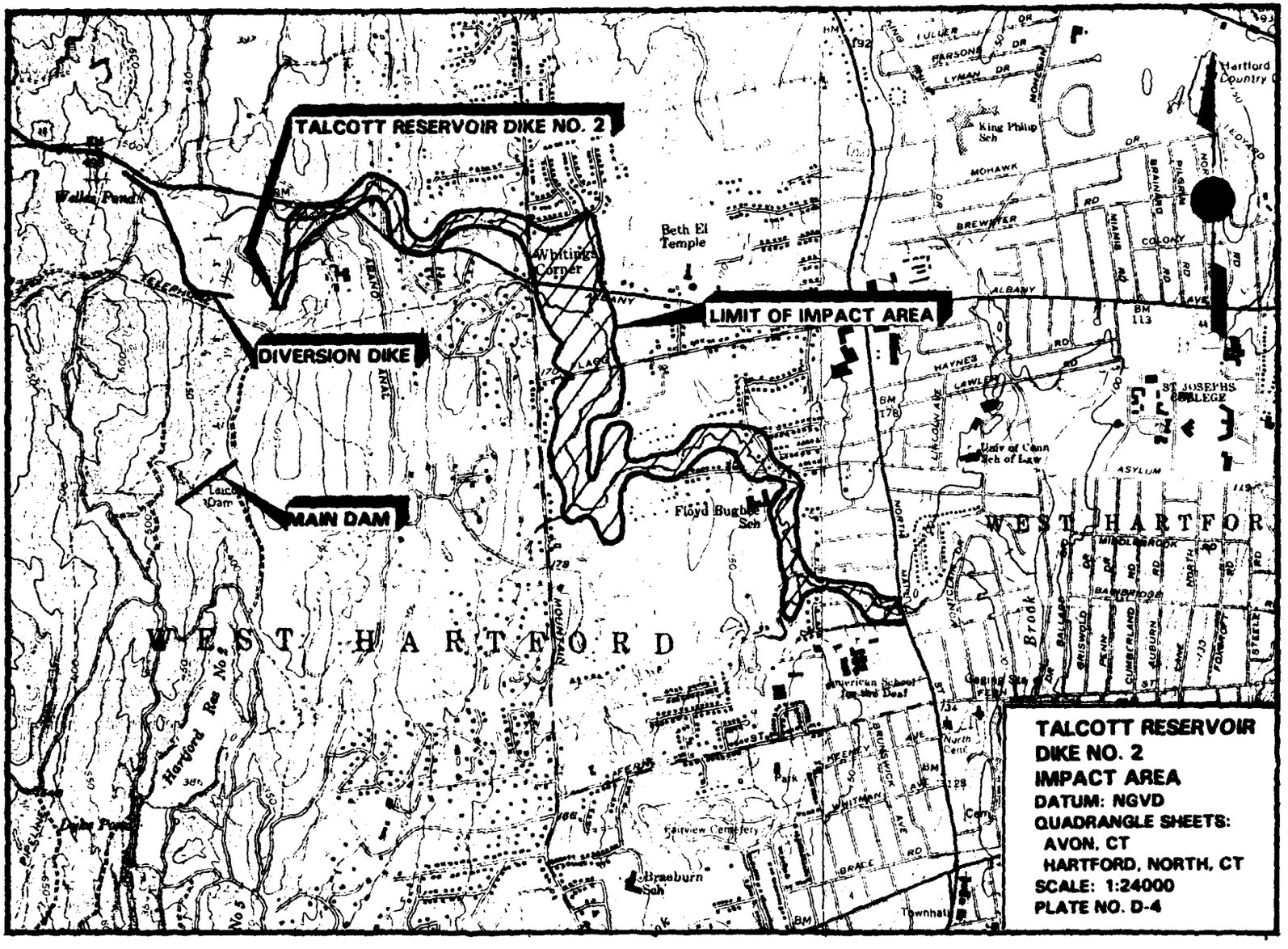
Capacity without overtopping of dam = 5400 (Total Project) CFS

"test flood" inflow discharge = 4047 CFS

"test flood" outflow discharge = 2666 CFS

TALCOTT RESERVOIR

DIKE NO. 2


TALCOTT RESERVOIR DIKE NO. 2
DIVERSION DIKE
MAIN DAM
LIMIT OF IMPACT AREA
WEST HARTFORD
WEST HARTFORD
Beth El Temple
Whiting Corner
Floyd Bugbee Sch
King Philip Sch
St Josephs College
Univ of Conn Sch of Law
Fairview Cemetery
Braeburn Sch
Townhall
Hartford Country
Talcott Brook
TALCOTT RESERVOIR
DIKE NO. 2
IMPACT AREA
DATUM: NGVD
QUADRANGLE SHEETS:
AVON, CT
HARTFORD, NORTH, CT
SCALE: 1:24000
PLATE NO. D-4

Talcott Reservoir - Dike No. 2

Dam Failure Analysis

1. Failure discharge with pool at Em. Spillway (elev. 452.5) = 4200 CFS
2. Depth of water in reservoir at time of failure = 13.5 ft.
3. Maximum depth of flow downstream of dam = 13± ft.
4. Water surface elevation just downstream of dam at time of failure) = 452±

The failure discharge of 4200 CFS will enter and flow downstream 19000 feet until the brook crosses North Main Street. Valley storage in this 19000 feet length of brook is not significant in reducing the discharge, and additional damage is likely downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	13.5	At Dike
300	434.5	4.5	
4900	223.3	3.3	
9300	161.3	1.3	
14500	141.3	1.3	
19000	101.±	1±	North Main Street

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Dike No. 2

Location West Hartford, Connecticut

Drainage Area 1.6 sq. mi., Top of Dam 458.0

Spillway Type None, Crest of Spillway 452.5 (Main Dam)

Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.

Pool Bottom Near Dam = 439

Assumed Side Slopes of Embankments = 2H:1V

Depth of Pool at Dam (Yo) = 13.5 Feet

Mid-Height Elev. 445.7

Length of Dam at Crest = 210 Feet

Length of Dam at Mid-Height = 125 Feet

40% of Dam Length at Mid-Height = W_b = 50 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

Peak Failure Discharge

$$Q_{pl} = 8/27\ W_b \sqrt{g}\ Yo^{3/2}$$

$$= (1.68)\ (W_b)\ (Y_o)^{3/2} = 4200 \text{ cfs}$$

Failure is assumed to coincide with pool elevation at Emergency Spillway Crest of Main Dam.

NOTES:

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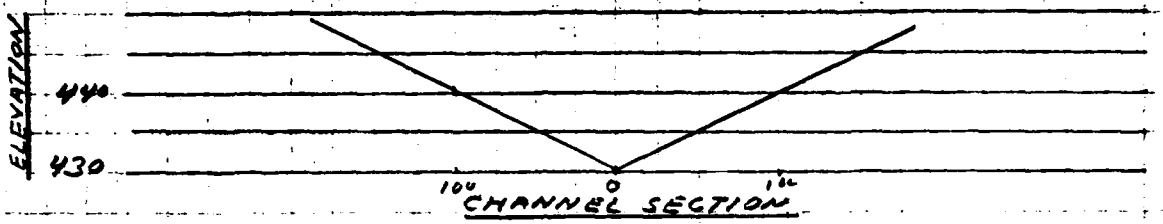
DAM FAILURE ANALYSIS PURCELL ASSOCIATES ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR – DIKE NO. 2

SECTION 300' DOWNSTREAM

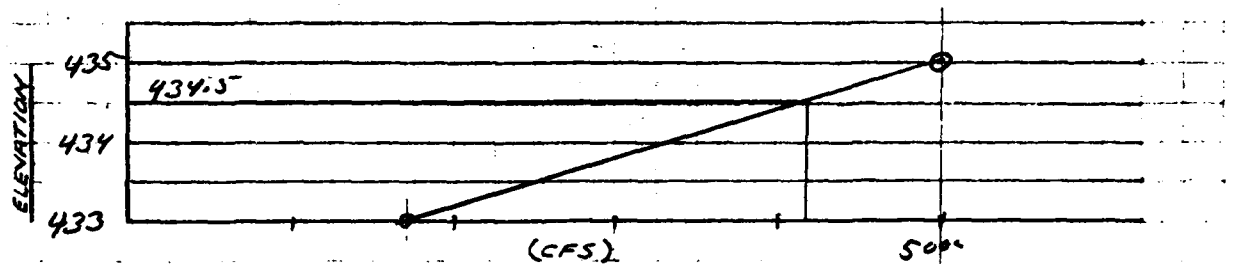
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .05 ft/ft



FULL SPILLWAY Q_s = 0 CFS

Q_{P_1} = 4200 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
440	1000	200	5	25000	10
435	250	100	2.5	5000	5
433	120	80	1.5	1700	3



$V_1 = \left(\frac{13.5 + 4.5}{2}\right)\left(\frac{50}{1} + \frac{90+0}{2}\right)\left(\frac{300}{43560}\right)\left(\frac{1}{2}\right)$ = 3 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 4200 CFS V_{AVG} = —

$V_2 = \left(\frac{— + —}{2}\right)(.3)$ = — AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 4200 CFS ELEV = 434.5

DEPTH = 4.5

FULL SPILLWAY : DEPTH = 0

INCREASE DUE TO DAM FAILURE = 4.5

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DAM FAILURE ANALYSIS
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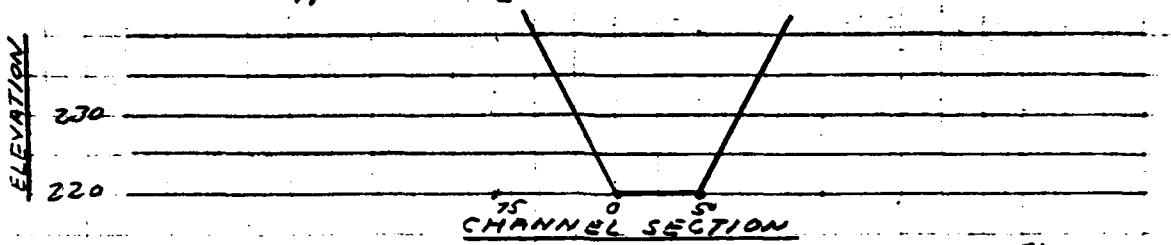
DAM TALCOTT RESERVOIR - DIKE NO. 2

SECTION 4900' DOWNSTREAM

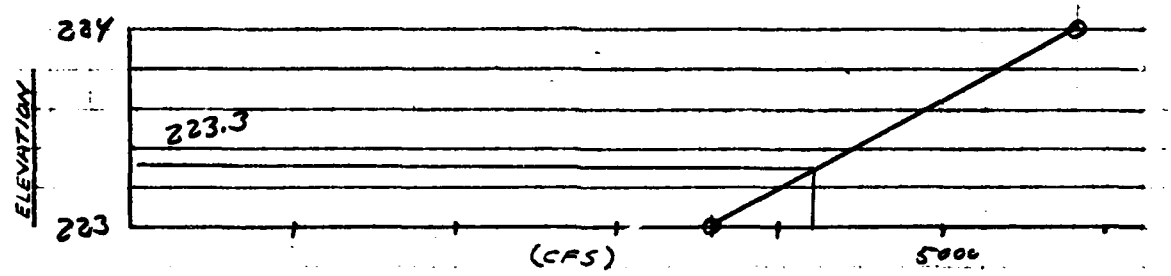
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n =$ .03 SLOPE (S_L) = .05 ft/ft



FULL SPILLWAY Q_s = 0 CFS

Q_{P_1} = 4200 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
223	165	60	2.75	3600	3
224	220	60	3.7	5500	4



$V_1 = \left(\frac{4.5 + 3.3}{2}\right)\left(\frac{90+0}{2} + \frac{60+50}{2}\right)\left(\frac{4600}{43560}\right)\left(\frac{1}{2}\right)$ = 21 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 4100 CFS V_{AVG} = —

$V_2 = \left(\frac{— + —}{2}\right)(5.2)$ = — AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 4100 CFS ELEV = 223.3

DEPTH = 3.3

FULL SPILLWAY & DEPTH = 0

INCREASE DUE TO DAM FAILURE = 3.3

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
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DAM FAILURE ANALYSIS
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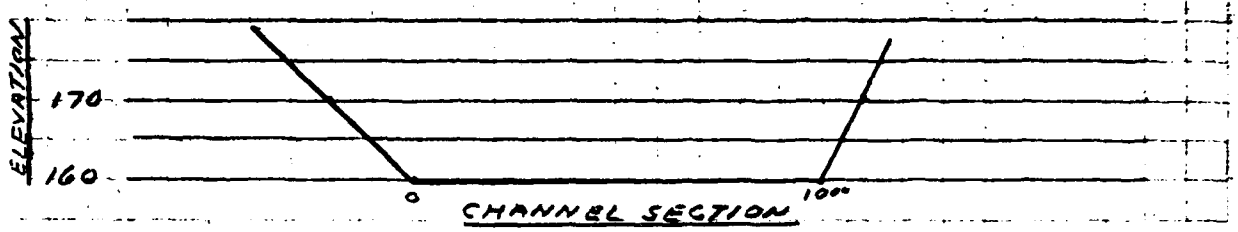
DAM TALCOTT RESERVOIR - DIKE NO. 2

SECTION 9300' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE $(S_L) = .002$ ft/ft

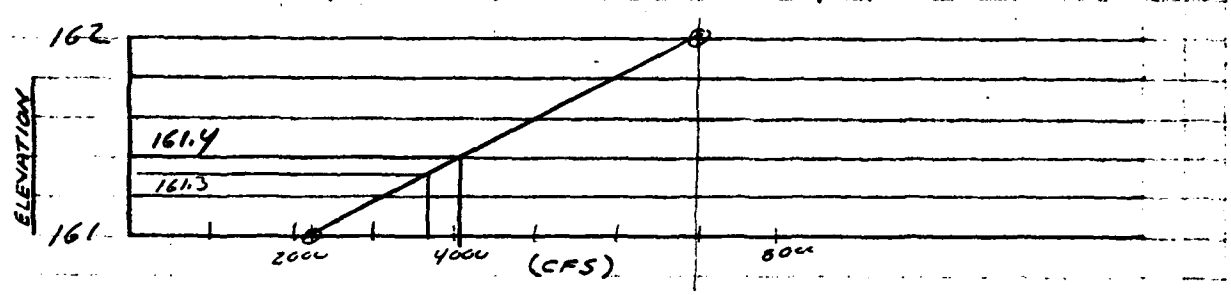


CHANNEL SECTION

FULL SPILLWAY $Q_s =$ 0 CFS

$Q_{P_1} =$ 4100 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
161	1000	1000	1	2200	1
162	2000	1000	2	7000	2



$V_1 = \left(\frac{3.3 + 1.4}{2}\right)\left(\frac{60+50}{2} \times \frac{1000}{1}\right)\left(\frac{4400}{43560}\right)\left(\frac{1}{2}\right) =$ 78 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S) =$ 3700 CFS $V_{AVG} =$ 69

$V_2 = \left(\frac{3.3 + 1.3}{2}\right)(26) =$ 60 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S) =$ 3800 CFS ELEV = 161.3

DEPTH = 1.3

FULL SPILLWAY ∴ DEPTH = 0

INCREASE DUE TO DAM FAILURE = 1.3

BY JR DATE 12/4/80 SUBJECT DAM INSPECTION STUDY SHEET NO. ____ OF ____
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DAM FAILURE ANALYSIS
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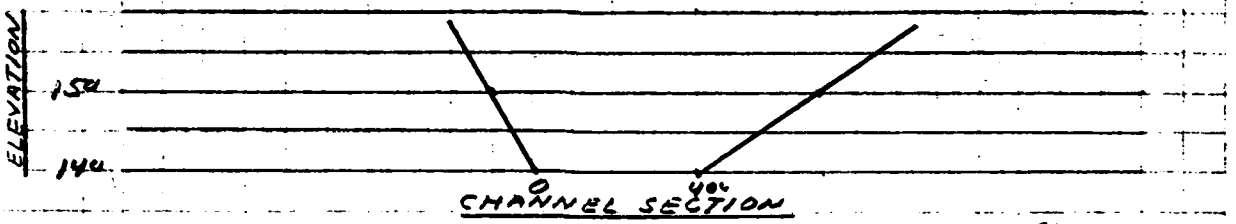
DAM TALCOTT RESERVOIR DAM - DIKE NO. 2

SECTION 14500' DOWNSTREAM

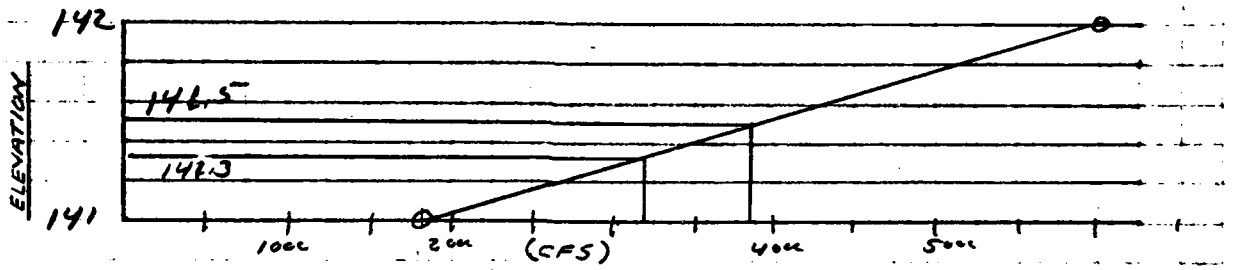
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .103$ SLOPE (S_L) = .0086 ft/ft



FULL SPILLWAY Q_s = 0 CFS

Q_{P_1} = 3800 CFS TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
142	850	450	1.9	6000	2
141	400	400	1	1800	1



$V_1 = \left(\frac{1.4 + 1.5}{2}\right)\left(\frac{1000}{1} + \frac{400}{1}\right)\left(\frac{5200}{43560}\right)\left(\frac{1}{2}\right)$ = 121 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_1/S)$ = 3200 CFS V_{AVG} = 117

$V_2 = \left(\frac{1.4 + 1.3}{2}\right)(83)$ = 112 AC-FT

$Q_{P_2} = Q_{P_1}(1 - V_{AVG}/S)$ = 3300 CFS ELEV = 141.3

DEPTH = 1.3

FULL SPILLWAY DEPTH = 0

INCREASE DUE TO DAM FAILURE = 1.3

Talcott Reservoir - Dike No. 2

A. Size Classification

Height of dam = 18.5 ft.; hence Small

Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence Inter-mediate

Adopted size classification: Intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives and excessive economic damage to numerous homes and buildings in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest.

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

a) Loss of homes 20+;
b) Loss of buildings 10+;
c) Loss of highways or roads 9;
d) Loss of bridges 7;

The failure profile can affect a distance of 19000 feet from the dam.

C. Hazard Potential Classifications

HAZARD	SIZE	TEST FLOOD RANGE
High	Intermediate	PMF

Adopted Test Flood = PMF = 2510 CSM

= 4047 CFS

D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles

Spillway crest elevation = N/A

Top of Dam Elevation = 458.0

Maximum spillway discharge

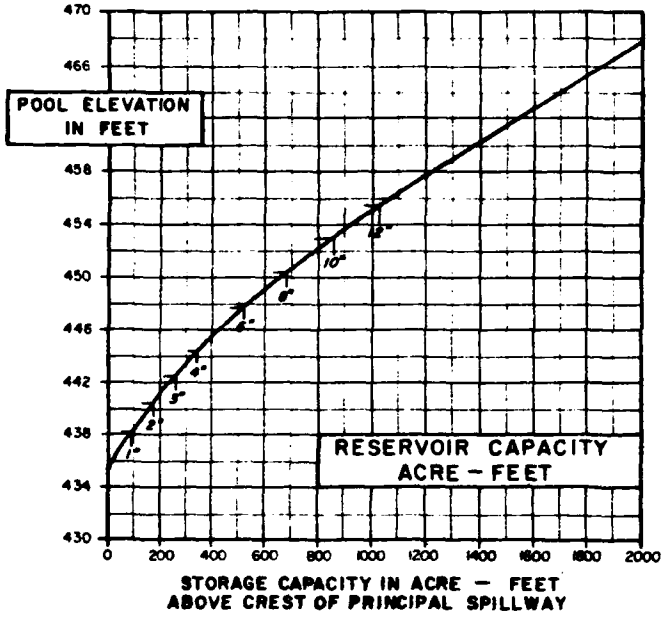
Capacity without overtopping of dam = N/A CFS

"test flood" inflow discharge = N/A CFS

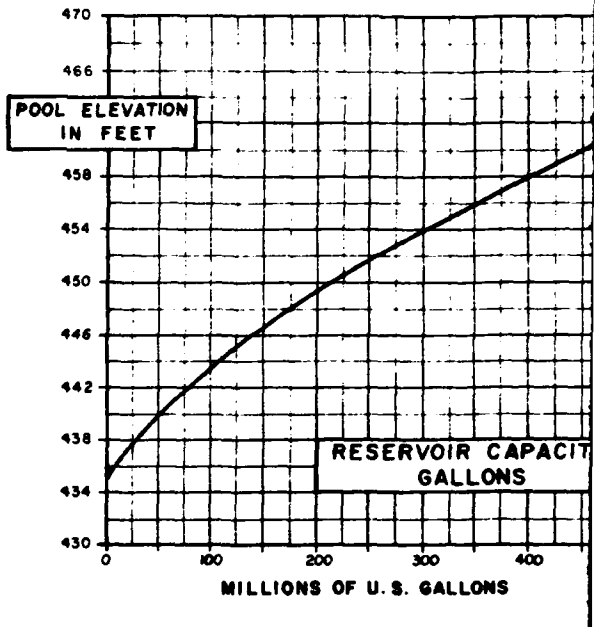
"test flood" outflow discharge = N/A CFS

RESERVOIR OPERAT

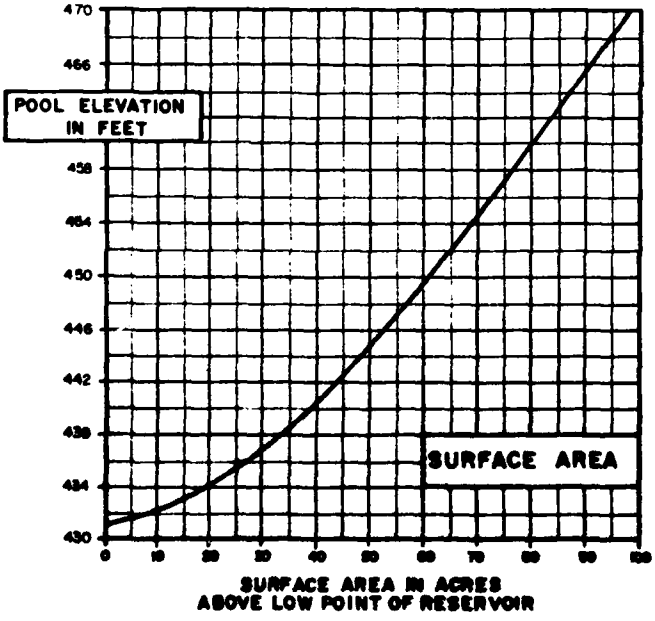
TALCOTT RESERVOIR-HART MEADOW BROOK - S



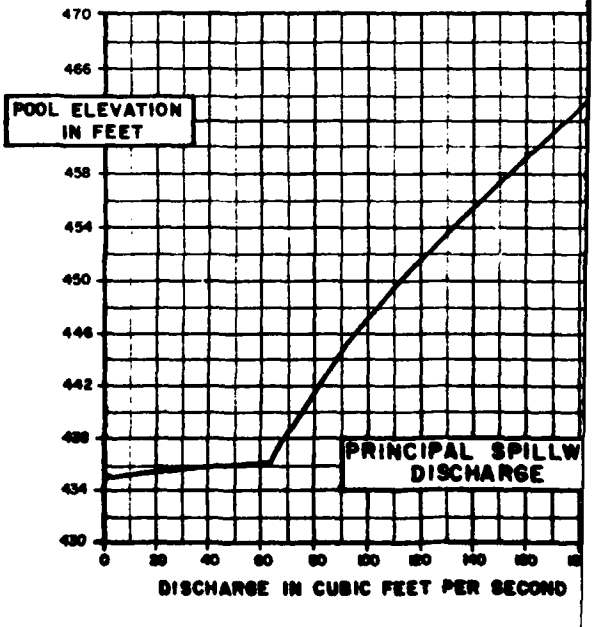
STORAGE CAPACITY IN ACRE - FEET
ABOVE CREST OF PRINCIPAL SPILLWAY



MILLIONS OF U.S. GALLONS



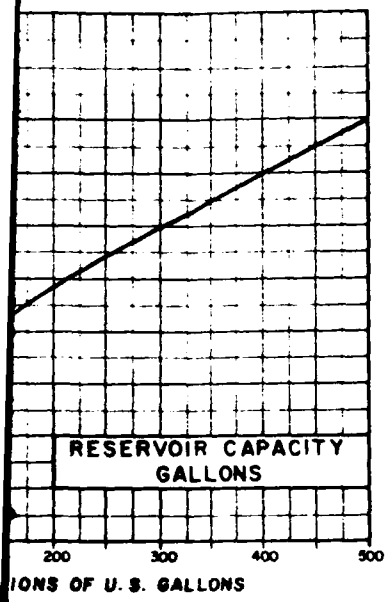
SURFACE AREA IN ACRES
ABOVE LOW POINT OF RESERVOIR



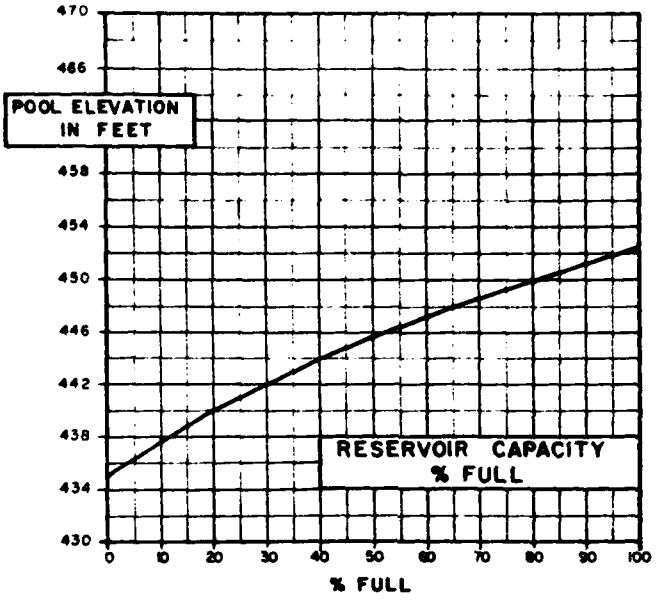
DISCHARGE IN CUBIC FEET PER SECOND

R OPERATION DATA

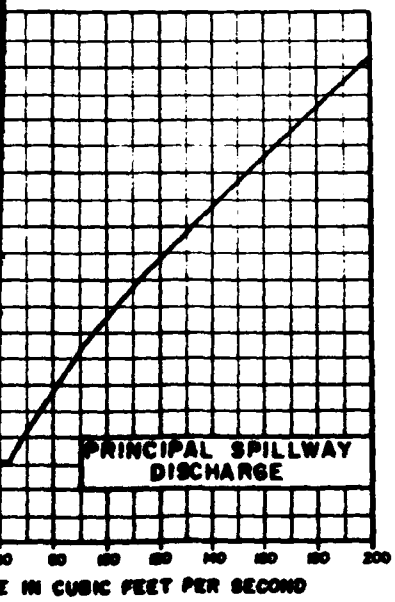
OW BROOK - SOUTH BRANCH PARK RIVER WATERSHED



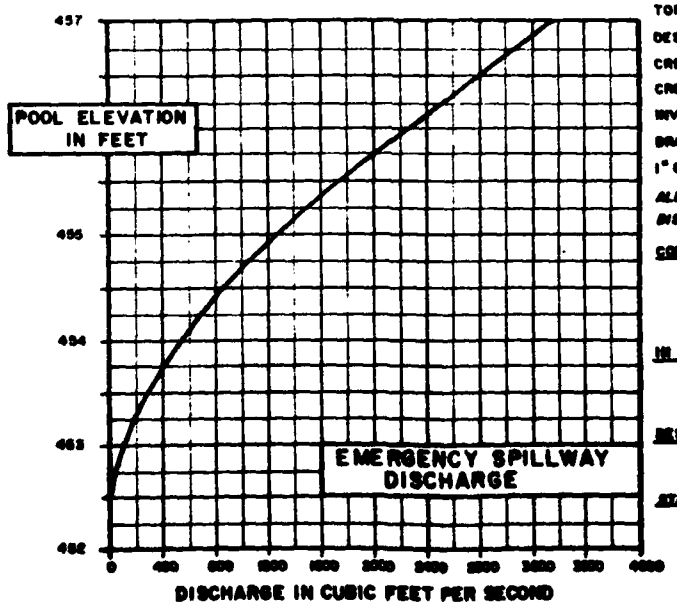
IONS OF U.S. GALLONS



% FULL



E IN CUBIC FEET PER SECOND



DISCHARGE IN CUBIC FEET PER SECOND

PERTINENT DATA

TOP OF DAM	EL.	458.0
DESIGN HIGH WATER	EL.	455.4
CREST EMERGENCY SPILLWAY	EL.	452.5
CREST PRINCIPAL SPILLWAY	EL.	435.0
INVERT LOW FLOW ORIFICE	EL.	431.0
DRAINAGE AREA CONTROLLED	1.61	SQ. MI
1" OF RUNOFF = 85.85	ACRE-FEET	

ALL ELEVATIONS REFER TO METROPOLITAN DISTRICT DATUM

CONSTRUCTED BY:
STATE OF CONNECTICUT
DEPARTMENT OF AGRICULTURE & NATURAL RESOURCES
JOSEPH N. GILL, COMMISSIONER

IN ASSOCIATION WITH THE:
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PUBLIC LAW 566 FUNDS

DESIGNED BY:
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

STATUS:
COMPLETED AUGUST 11, 1964

Anderson-Nichols Associates February 1967

2

APPENDIX E

INFORMATION AS CONTAINED IN THE

NATIONAL INVENTORY OF DAMS

NOT AVAILABLE AT THIS TIME

END

DATE
FILMED

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